

ELEMENTS
OF
THERAPEUTICS
AND
MATERIA MEDICA.

TO WHICH ARE PREFIXED
TWO DISCOURSES
ON THE HISTORY AND IMPROVEMENT OF THE
MATERIA MEDICA,
ORIGINALLY DELIVERED AS
INTRODUCTORY LECTURES.

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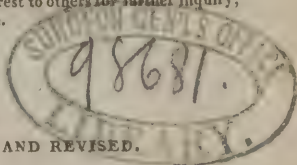
"To communicate what I have tried, and leave the rest to others for farther inquiry,
is all my design in publishing these papers."—*Newton*.

VOL. I.

FOURTH EDITION, ENLARGED AND REVISED.

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EASTERN DISTRICT OF PENNSYLVANIA, TO WIT:

BE IT REMEMBERED, That on the fifteenth day of September, in the fiftieth year of the Independence of the United States of America, A. D. 1825, Nathaniel Chapman, M. D. of the said district, hath deposited in this office the title of a book, the right whereof he claims as author, in the words following, to wit:

"Elements of Therapeutics and Materia Medica. To which are prefixed two Discourses on the History and Improvement of the Materia Medica, originally delivered as introductory lectures. By N. Chapman, M. D. Professor of the institutes and practice of Physic and clinical practice in the University of Pennsylvania. 'To communicate what I have tried, and leave the rest to others for farther inquiry, is all my design in publishing these papers.'—*Newton*. Fourth edition, enlarged and revised."

In conformity to the Act of the Congress of the United States, entitled "An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned." And also to the act entitled, "An act supplementary to an act, entitled, 'An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned,' and extending the benefits thereof to the arts of designing, engraving, and etching, historical and other prints."

D. CALDWELL,

Clerk of the Eastern District of Pennsylvania.

TO THE

MEDICAL STUDENTS

OF THE

UNIVERSITY OF PENNSYLVANIA,

THIS WORK,

PREPARED MAINLY FOR THEIR USE,

IS AFFECTIONATELY INSCRIBED.

PREFACE

TO THE FIRST EDITION.

CALLED, very unexpectedly, in the year eighteen hundred and thirteen, to teach the *materia medica* in the University of Pennsylvania, I entered on the enterprise with none of the advantages which would have been derived from the previous study of the subject with this precise and definite view. After having delivered three courses of lectures on this science, I had the honour to be translated to the chair of the Institutes and Practice of Medicine in the same School. As soon as this event took place, I was pressed by the class that had formerly attended me, with an earnestness which I could not well resist, to prepare a work on the *materia medica*, or, in other words, to print my lectures. Engaged since, in the execution of the weighty duties of my new appointment, and in the still more oppressive exercise of an arduous profession, I could command little or no leisure for such a purpose. Except, therefore, the retrenchments which were required, to reduce the work to the ordinary dimensions of a Text Book, and a slight revision

of a few passages, I now commit my lectures to the press, in the state in which they were read, without any alteration or amendment in the matter or style. To those, however, who heard them in the delivery, they may probably appear to have sustained an injury, in the loss of the facts and illustrations, thrown out in the extempore digressions, in which it is my habit very freely to indulge.

No one can be more sensible than myself, how much the work suffers by this premature publication. But it could not be prevented, without violating the promise to which I have alluded, and disappointing the purchaser of the manuscript, who had become exceedingly impatient of any further delay. Distinct from the motives I have assigned, I confess, that I was also influenced somewhat by the persuasion, perhaps a vain one, that the work, comparatively imperfect as it is, might prove not altogether unacceptable to the public, and particularly to the students and practitioners of physic, in the United States. It will, at least, be useful to my class, as exhibiting more than can elsewhere be met with, of my own speculative and practical views. Numerous, too, as are the treatises on the *materia medica*, there is no one which I have seen, precisely on the plan of mine, uniting to some of the more useful pharmaceutical details, copious practical instructions, adapted to the management of diseases, modified, as they confessedly are, by the peculiarity of the state of society, and climate, of our own country.

In every science some system is required, and in none, perhaps, is it more necessary, than in the *materia medica*. Consisting of an immense collection of diversified materials, not always obviously related, it would, without a perspicuous arrangement, be greatly defective in practical utility. After much deliberation, and a full comparison of the several plans of classification hitherto proposed, I was induced to prefer the one which I have adopted. But I am now persuaded, that a more natural, as well as useful arrangement of medicines, might be made, on the principle of their affinities to the several systems of the body, and, should an opportunity be afforded me, it is the one which I shall attempt hereafter to establish.

It will be perceived, that, instead of noticing in detail, as is usual with the writers on this department of physic, every individual article, I have dwelt more on the class to which it may be attached, pointing out the mode of operation of the whole congeners, or kindred assortment, and their peculiar relations to disease. By thus treating the subject, I cannot help thinking, that much greater order has been attained, and some perplexity and tedious repetitions avoided. Yet I have not omitted to give some account of each substance separately, to indicate its more important pharmaceutical preparations, and its medicinal virtues, when these may be different from others of the same class, together with its dose, and manner of administration. I have also subjoined, from a most

valuable work,* which has recently appeared, a list of *incompatible* substances, or such as, when combined, produce a change of composition. In doing this, I was fully aware, that, in many cases, these very changes give rise to new products, of increased efficacy. Great mischief, however, often ensues from want of an acquaintance with the relative affinities of articles, without which, indeed, neatness and precision in our prescriptions are utterly unattainable. These general discussions on the *modus operandi*, and practical application of the several classes of medicines, are denominated Therapeutics, a province of our science exceedingly interesting, and which has been heretofore strangely neglected.

There was, here, a very wide field open to me. I have sometimes been led into physiological inquiries, and, still oftener, into discussions relative to the general nature of disease, or the peculiar character of the affection, directly before me. Disquisitions of this sort, though they may seem to trench upon another department, must be allowed as being indispensable to a clear and intelligible application of our remedies. Could it, indeed, be possible to convey a distinct conception of the various uses of mercury, opium, bark, or of any active article of the *materia medica*, were we not permitted the privilege of entering so far into the history of the diseases, to which the medicine is appropriate, as to enable us to point out

* Paris's Pharmacologia.

the exact circumstances of the case in which it may be beneficially prescribed? Liberally as I have employed this license, I am afraid that I have not always succeeded in my object, and certainly, in many instances, by the apprehension of being accused of unwarrantable digressions, I have so narrowed my limits, as to do great injustice to my own opinions and modes of practice.

In the execution of this part of my plan, I have had to encounter another difficulty, which, perhaps, has sometimes proved insuperable.

The application of different medicines, or classes of medicines, to the same disease, as emetics and cathartics, for example, has compelled me to re-state the case, in which, to the irksomeness of frequent recapitulations, may, perhaps, be added the imputation of occasional inconsistency, or even of positive contradiction. But it should be recollected, that ambiguities of this sort are scarcely separable from extreme brevity, and I will not forbear to hope, that most of the instances which, at first, may seem liable to such criticisms, will strike differently on a more considerate and careful examination.

As respects nosology, I have not adhered, with strictness, to any one existing system: all attempts of this nature are marked, in my opinion, with so many absurdities, and false collocations, as to forfeit every claim to an entire and indiscriminate adoption. My own arrangement of diseases, which is according to their more prominent seats, or, in other words, as

they occur in the different systems, by which I mean parts of an identity of structure, and co-operating in the performance of the same offices, I wished more time to perfect and mature, before I offered it to the public. Though, in this instance, heedless of the technical formalities of the schools, I have not deviated from the established nomenclature of the science, nor ventured to disturb the language which seems now to be settled by common consent, and consecrated, as it were, by universal usage.

By a recent writer, the *materia medica* has been compared to an inquisitive traveller, who, collecting every thing which interests him, on his journey, sees his baggage increase every moment in bulk, and feels himself frequently obliged to stop and examine it, in order to free himself from the useless articles, or to arrange, in a more convenient order, those which he cannot dispense with, that they may occupy less room, and the carriage, or the employment of them, be more easy and commodious. This is a very happy and correct illustration, since, surely, never was a science, to continue the allusion, so overcharged with superfluous lumber, as the *materia medica* in its present state.

This being indisputably the case, I have, with intrepid decision, endeavoured to cleanse this augéan accumulation, by expunging whatever substances are known to be inert or redundant, and to retain only such as, from their powerful or efficacious properties, are emphatically denominated the “heroic remedies,”

or are confessed to be of unequivocal utility in the treatment of diseases. The practitioner who may wish information relative to the trite or subordinate medicines, I am content to refer to any one of the common Dispensatories. Yet, while thus boldly practising a system of expurgation with regard to the *materia medica*, I am by no means disposed to close the science against the introduction of new articles, or such improvements as may be afforded by further inquiries, or more correct views. It will accordingly be found, that I have enlarged its boundaries by the addition of several medicines, chiefly the indigenous productions of the United States—and, now and then, by expatiating more fully than had been previously done, on the properties and uses of some of the older articles.

Having expressly treated, in one of the subsequent discourses, of the improvement of the *materia medica*, I shall not here retouch the subject, interesting as it is in every view, and greatly as my reflections upon it might be extended. Yet, I cannot refrain from again pressing upon our physicians, who are so advantageously distributed for the purpose throughout the country, the strong claims which the profession, as well as the cause of humanity, has upon them, to devote more attention to the study of our native plants. Enough, surely, has been done in this field of exertion, to afford the amplest encouragement, and to facilitate further researches.

To what I have elsewhere noticed, as already accomplished, may now be added a work on the American materia medica, recently issued from our University, which, in some respects, may challenge a comparison with any similar production of Europe. It affords me pleasure to announce, that an undertaking somewhat of the same nature in the School of Boston, is commenced, by one of the professors, who, I know, will bring to it qualifications that can scarcely fail to insure it the most splendid success.

These are enterprises of the highest utility to the interests of medicine, and which are well calculated, by reflecting the lights of science from the new upon the old world, to redeem, in part, the heavy literary debt we have incurred, and to vindicate the insulted genius of our country, from the contumelious reproaches, so long and so disgracefully endured by us.

PHILADELPHIA, *September*, 1817.

IN preparing this second edition of my work, I have endeavoured to render it more worthy of the patronage with which the first was received. The whole has been revised, some parts retrenched, which seemed redundant, and others enlarged by fresh intelligence. My aim has been to present a sort of digest of the science of which I treat, in its present state, embracing all the recent discoveries and improvements which it claims. How far I have succeeded, it is not my province to decide.

Nov. 1821.

WITH an undiminished regard to public opinion, and a still livelier sense of the patronage it has received, I have, in preparing this third edition of my work, endeavoured its improvement as far as my leisure would allow, and I trust not ineffectually. Much of it has been re-written, the text generally revised, and no inconsiderable portion of new matter added. Despising an ostentatious display of obsolete or commonplace learning, the common refuge of ignorance or dulness, I have sought not idly to parade the opinions of others, but to give to those, for whose instruction it is chiefly intended, the result of my own observations and experience, derived from an extensive practice, both public and private, of more than twenty years. The pedant or impostor, who wishes to thumb over a rosary of names, only valued because not familiar, or to make a pompous display of learned references and citations, that have no useful bearing, may, without labour, acquire his lesson from the *Apparatus Medicaminum* of Murray—a work, which has been covertly invaded, and despoiled, by several of the late *erudite* writers on the *materia medica*.

To derogate from the substantial merits of this celebrated production, or to undervalue medical industry and research, when properly directed, is very remote from my purpose. Yet from a casual inspection of the work, for within a few days only have I had it for the first time in my hands, I must say, that it owes much of its bloated dimensions, and, perhaps, some of its

fame, to the introduction of what the eloquent Burke, with his usual felicity of expression, denominates *barren* knowledge, that species, which is unsusceptible of any practical application. What I mainly aimed at, I must indulge the hope that I have in part attained, and, of which, I am the more persuaded, from the great success of the former and less perfect editions of the work.

Nov. 1823.

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ELEMENTS, &c.

DISCOURSE I.

History of the Materia Medica.

MEDICAL Science, in its present state, is an accumulation of such extensive and diversified knowledge, that it has been found convenient to divide it into several distinct departments. My object is, to treat of that province of it denominated the *Materia Medica*, or, in other words, to deliver some account of the means employed in the prevention or cure of diseases.

No branch of medicine is more copious than this, and none, perhaps, of greater importance. As well, indeed, might the mechanic attempt to carry on his operations without an acquaintance with his tools, as we to exercise our profession ignorant of the properties of our remedies.

Notwithstanding the number of histories of the science already extant, I shall offer, as preliminary

to my main design, a concise view of the rise, progress, and existing condition of the *materia medica*.

The rudiments of this department of medicine were probably coeval with the very existence of the species. It can hardly be supposed, that uninterrupted health was ever among our happy privileges—and mankind, always liable to accidents and diseases, would naturally seek the measures of mitigation or relief. The rudest tribes of savages are found, accordingly, to have their remedies and modes of cure, often rash, violent, and injudicious, though sometimes discriminated with precision, and adapted with dexterity and skill.

Commenced, however, as it may, the *materia medica*, humble in its origin, has gradually grown and become improved, by the contributions of vulgar ignorance, by fortuitous discoveries, by empirical experiments, and, in some instances, by well regulated inquiries.

Medicine, anterior to the civilization of Greece, presents a dreary waste, containing little to excite curiosity, or reward the trouble of research. Though it had been previously cultivated in Egypt, it does not seem to have participated, to any extent, in the general improvement of the arts and sciences, or to have kept pace with the polish and refinement of that country.

Confided entirely to the care of their priests, it was taught and practised only by them, who mixed with it the grossest superstitions, and subjected it to

regulations of the most pernicious tendency, crippling it in its infancy, and precluding all farther growth or advancement. My allusion is to certain ordinances, among which was one entailing the profession on the eldest son as an inheritance, and another fixing the time for the application of remedies in all diseases, without discrimination—prohibiting any new observation, or experiment, or innovation, in any respect. The stream of science, otherwise so rapid, thus inevitably became stagnant—and, as not to advance in knowledge is to recede, we must presume, that, under such circumstances, the condition of medicine rather deteriorated than improved.

By the most ancient of historians we are informed of a custom, which prevailed among the Chaldeans and Babylonians, in which is to be traced probably the earliest attempt to collect a *materia medica*. The sick were so exposed in places of public resort, on the highways, and in markets, that travellers and other persons might communicate to them the means of cure, which had been successfully used in similar cases. It is added, that every one passing by was obliged, by law, to give some advice about each disease, and to indicate a remedy—and, amidst such a multitude of suggestions, some, no doubt, proved salutary and valuable. But the results of experience in this mode acquired, suffered much in amount, as well as accuracy, from being handed down only by tradition. The first regular record of medicine was

kept in the temples of Esculapius in Greece, where diseases and remedies were engraven on durable tablets, and from this, I think, we should date the dawn of what may be considered medical science.

The precise nature of these remedies, or the real state of medicine at this epoch, it were now vain to endeavour to determine. By the many revolutions and vicissitudes which have happened in human affairs, in this long lapse of ages, all authentic evidence has been lost, and researches the most patient and recondite, have ended in conjectures wholly unsatisfactory.

It would appear, however, from incidental sources of information, that some very active and useful remedies were known in early times. Melampus of Argos, the most ancient Greek physician with whom we are acquainted, is said to have cured one of the Argonauts of sterility, by the *rust of iron in wine*, and the daughter of king Prætus of melancholy, with the *black hellebore*. It is probable, that it was opium, or some preparation of the poppy, which Helen mixed with wine, and gave to the guests of Menelaus, under the title of *Nepenthe*, to increase their hilarity.*

The Iliad abounds with proofs of some knowledge of surgical remedies, particularly for wounds, which were treated by bathing with tepid water, cleansing them by suction, and by lenitive cataplasms, to assuage pain, and allay inflammation.

* Paris's Pharmacologia.

Thus,

“ Patroclus cuts the forked steel away,
Then in his hand a bitter root he bruis’d,
The wound he wash’d, the styptic juice infus’d :
The closing flesh that instant ceas’d to glow,
The wound to torture, and the blood to flow.”—*ILIAD*.

We learn, moreover, that Podalirius, on his return from the Trojan war, cured the daughter of Damæthus, who had fallen from a height, by *bleeding* her in both arms.

That the profession was highly appreciated, even with an allowance for the exaggeration of poetry, is shown by the following lines :

“ A wise physician, skilled our wounds to heal,
Is more than armies to the public weal.”—*ILIAD*.

Yet it is quite manifest, that the resources of the healing art were then exceedingly limited, and in every view it was lame and defective. Nor, indeed, till the appearance of that illustrious character, on whom posterity, by common consent, has bestowed the enviable title of “ Father of Medicine,” does the subject assume a shape so definite as to excite any lively interest, or to merit much attention.

Endowed with a genius vigorous and original, he cleared the profession of the incongruities of empiricism, and imparted to it some of the order and perspicuity of scientific arrangement. Every department of physic was more or less enriched by his discoveries, or reclaimed by his judgment, and the *materia medica*,

in common with the rest, is largely indebted to him. Many of our remedies are the result of his observations and inquiries, and by his writings we are enabled, pretty accurately, to estimate the state of the science at the period when he flourished.

Content to refer to them for minute details, I shall merely observe, that he was in possession of, and seems to have applied with sufficient discrimination, a great variety of active articles, nearly all of which are still retained in practice. Of these, the most important are the colocynth, the scammony, the elaterium, the black and white hellebore, the mercurialis, the elder, the leek, the onion, the parsley, the cantharides, the henbane, the silphium, supposed to be the asafœtida, the mandragora, several preparations of the poppy—and of mineral substances, some of the combinations of copper, and probably also of antimony. He practised venesection, and topical bleeding by scarifications and cups—and was fully conversant with the use of enemata, and of the whole routine of bathing, frictions, exercise, diet, &c. exhibiting a pretty ample catalogue of remedial agents, and auxiliary expedients and resources.

Excepting anatomy, the study of which was eagerly prosecuted, little was done after the age of Hippocrates, for any province of medicine, in Greece. Of the *materia medica*, the chief promoters were the philosophers, who, cultivating natural history, made some small and indirect accessions to it.

To Aristotle I more particularly allude: a man of

such various powers and extensive attainments, as even in medicine to have eclipsed all its professed votaries of the age, and to have impressed on it the character of his own views.

Yet, whatever may be our obligations to him in other respects, certain it is, that while he enlarged the boundaries, he greatly corrupted medicine, by introducing into it the crudities of other branches of knowledge, between which and our science there is no immediate affinity.

The acquisitions of the Greeks became, for the most part, an inheritance of the Romans. This extraordinary people had long dazzled the world with the splendour of their military achievements, and excited astonishment by the extent of their conquests, before they were distinguished by the polish of civilization, or the culture of letters.—Devoted to arms, to be adroit in the art of destruction was deemed by them the highest of human accomplishments. But, towards the commencement of the Christian era, when they had subdued the fairest portions of the globe, and in some degree allayed their avarice of dominion, the ferocity of their martial character began to subside, and a spirit propitious to more liberal pursuits was manifested.

The wealth and renown of their mighty city, attracted to it the learned and ingenious of every country. From Greece, “the native seat of the muses,” she gradually imported much that was excellent in the ornamental and useful arts, in literature, science,

and philosophy. Nevertheless, medicine was little cultivated.* Conceiving their superiority over other nations to be owing to a retention of an unmitigated

* Cato was the first of his countrymen who wrote on the subject of medicine. Rome had existed for 500 years without professional physicians. A people who as yet were strangers to luxury, and consisted of farmers and soldiers, (though surgical operations might be frequently necessary,) would be exempt from the inroads of the "grisly troop," so much encouraged by indolence and debauchery. Like all semi-barbarous people, they believed that maladies were to be cured by the special interposition of superior beings, and that religious ceremonies were more efficacious for the recovery of health than remedies of medical skill. Deriving, as they did, much of their worship from the Etruscans, they probably derived from them also, the practice of attempting to overcome disease by magic and incantation. The augurs and aruspices were thus the most ancient physicians of Rome. In epidemical distempers the Sibylline books were consulted, and the cures they prescribed were superstitious ceremonies. We have seen that it was to free the city from an attack of this sort, that scenic representations were first introduced at Rome. During the progress of another epidemic infliction, a temple was built to Apollo—and, as each periodic pestilence naturally abated in the course of time, faith was confirmed in the efficacy of the rites which were resorted to. Every one has heard of the pomp with which Esculapius was transported, under the form of a serpent, from Epidaurus to an islet in the Tiber, which was thereafter consecrated to that divine physician. The apprehension of diseases raised temples to Febris and Tussis, and other imaginary beings belonging to the painful family of death, in order to avert the disorders they were supposed to inflict. It was perceived, however, that religious processions, and lustrations, and *lectisterniums*, were ineffectual for the cure of those complaints, which, in the sixth century, luxury began to exasperate and render more frequent at Rome. At length, in 534, Archagatus, a free-born Greek, arrived in Italy, where he practised medicine professionally as an art, and received, in return for his cures, the endearing appellation of *Carnifex*. But though Archagatus was the first who practised medicine, Cato was the first who wrote of diseases and their treatment as a science, in his work entitled *Commentarius quo medetur filio, servis, familiæ*. In this book of domestic medicine, duck, pigeons, and hare, were the foods he chiefly recom-

ruggedness of character, it became a part of their policy to check, by legal prohibitions, whatever had a contrary tendency: on this account, the introduction of those arts was still resisted, which soften and embellish manners, alleviate the sufferings of our nature, minister to the comforts, or smooth the asperities of life. Corrupted, however, at last, by the accumulated wealth which flowed in upon them, luxury and indolence ensued, and with these vices, a train of diseases, of which they are the fruitful source. Men

mended to the sick. His remedies were principally extracted from herbs—and colewort, or cabbage, was his favourite cure. The recipes indeed, contained in his work on agriculture, show that his medical knowledge did not exceed that which usually exists among a semi-barbarous race, and only extended to the most ordinary simples which nature affords. Cato hated the compound drugs introduced by the Greek physicians—considering these foreign professors of medicine as the opponents of his own system. Such, indeed, was his antipathy, that he believed, or pretended to believe, that they had entered into a league to poison all the barbarians, among whom they classed the Romans.—“*Jurârunt inter se,*” says he, in a passage preserved by Pliny, “*barbaro necare omnes medicina: et hoc ipsum mercede faciunt, ut fides, iis sit, et facile disperdant.*” Cato, finding that the patients lived notwithstanding this detestable conspiracy, began to regard the Greek practitioners as impious sorcerers, who counteracted the course of nature, and restored dying men to life by means of unholy charms; and he therefore advised his countrymen to remain steadfast, not only by their Roman principles and manners, but also by the venerable unguents and salubrious balsams which had come down to them from the wisdom of their grandmothers. Such as they were, Cato’s old medical saws continued long in repute at Rome. It is evident, that they were still esteemed in the time of Pliny, who expresses the same fears as the censor, lest hot baths and potions should render his countrymen effeminate, and corrupt their manners.

DUNLAP’S *History of Roman Literature.*

skilled in the art of healing being now wanted, the injurious restrictions relative to the profession of medicine, were in consequence removed.*

Of their writers, among the earliest of any consideration is the chaste, the elegant, the classical Celsus. He lived in the second reign of the imperial dynasty. Disputes have arisen, whether he pursued medicine as a profession, or only attended to it as a part of liberal science. Be this as it may, the work of his which has descended to us, is unrivalled by antiquity, and will now reward the most studious perusal. An eminent modern teacher emphatically enjoins on every student, "to keep Celsus in his hands by day and by night."

Concerning the *materia medica*, more information may be derived from him than from any of his predecessors. Though not professedly treating the subject, the view which he exhibits of it is very satisfactory, up to the period at which he wrote.

No province of medicine received any material improvement in the succeeding century. Engaged

* On the prohibition of physicians settling in Rome, there remains a letter of Cato the Censor, which is truly curious, on account of the stupid ferocity it breathes. "That violent and prejudiced man thought to govern the possessors of the wealth of the universe like a convent of monks, or as he managed his own household. Cruel, parsimonious, and capricious, he is well known to have ruled over the latter with the most tyrannical sway. To combine all sorts of despotism, he himself assumed the care of his family and slaves when sick—and the means which he employed for this purpose, evince the most disgusting ignorance, and the most ridiculous superstition."—CABANIS.

in perpetual controversies on points of doctrine, its cultivators have bequeathed to us little else than a mass of vague and unintelligible hypotheses. Two writers, however, on the *materia medica*, at length appeared. These are Dioscorides and the elder Pliny, who, though, perhaps, they ought to be excepted from this harshness of criticism, are now consulted rather as objects of curiosity, than for the purpose of gaining, in the present comparatively enlightened state of the science, any sound or useful information.

But at no distant interval came Galen, one of the most remarkable characters whom our science has produced, whether we regard the extent of his learning, or the universality of the homage which he commanded. During thirteen hundred years, his opinions were received as oracular authority, wherever medicine was cultivated. But so long and uninterrupted a reign must in part be ascribed to the operation of those general causes, which, we shall presently see, extinguished the lights of learning, and enveloped Europe for a portion of the time in the darkness of barbarism.

As Galen wrote copiously on the *materia medica*, it was to be expected, from his vast erudition, and practical experience, that the subject would have been considerably benefited by his exertions. But in this respect we are disappointed. The knowledge which he affords us is exceedingly encumbered by spurious theory, and obscured by the complexity of his prescriptions.

After his death, the progress of medicine may be considered as having terminated in Rome. Towards the close of the second century, this stupendous empire, which had proudly ruled the world, and where the human character had appeared to the greatest advantage, began to exhibit the melancholy spectacle of decay, and was ultimately overthrown by the successive attacks of different tribes of uncivilized nations. Not content with the conquest and plunder of the country, these ruthless invaders destroyed, in their fell career, nearly all the monuments of taste, literature, and science, which had been so splendidly raised—and, having effected this state of desolation, carefully repressed the spirit of intellectual improvement, lest it might enfeeble that martial energy which alone they prized.

In this turbulent age, so far from any advancement having been made in science, or in the correction of taste and manners, even the vestiges of ancient learning and civility were nearly lost. Thus neglected, the human mind was depressed into the profoundest ignorance, or shot into the wild licentiousness of savage nature. Europe, accordingly, for a long series of time, produced scarcely a single work deserving of criticism, or one solitary discovery or invention. Even the scattered relics of literature and taste, which floated from the wreck of the western into the eastern division of the empire, maintained only a temporary and feeble existence, uncherished

and unproductive, and then sunk under the overwhelming inundations of the Saracens.

An effort was made by two illustrious monarchs,* to meliorate this dismal condition of things. But the light thus shed, was only the glare of the transient meteor of the night, which, passing away, left the scene in augmented darkness.

Yet medicine did not become entirely extinct.— Among the writers, on the contrary, of this disastrous period, the disciples of the school of Alexandria, in which the science was sheltered, there are several still read with advantage, as respectable compilers, without being devoid of original suggestions.† . Their services to the *materia medica*, however, deserve no special notice.

As the violent dispositions of the barbarous enthusiasts above mentioned, were lulled by a relaxation of religious ardour, by a satiety of conquests, and a full indulgence of the lust of plunder, the arts and sciences began to be cherished, and medicine was particularly patronised.

By the middle of the ninth century, we find that establishments for the teaching of it were liberally endowed, and many of the Greek writers translated. To each place of worship were attached a hospital and a school. Physicians, too, were now rewarded

* Charlemagne and Alfred, who founded the universities of Paris and Oxford, &c.

† *Ætius*, *Oribasius*, *Alexander of Tralles*, and *Paulus Ægineta*;

by an unusual elevation of rank and emolument. Yet our science, even with such munificent encouragement, did not succeed. The only branch of it materially indebted to the labours of the Arabians, is the *materia medica*. Dwelling in a country, and having a connection with India—a region equally rich in active plants, in spices, in aromatic gums, they detected the medicinal properties of some of these substances, and applied them to the treatment of diseases.

It is from the Arabians we derive the mild purgatives, manna, cassia, senna, and rhubarb, as well as musk, nutmeg, mace, and cloves. The credit of introducing camphor as a remedy, seems due to them—and, unquestionably, they were the first to extract sugar from the cane, and apply it to the formation of syrups, julaps, conserves, and other pharmaceutical processes. Yet, with these solid acquisitions to the *materia medica*, were mixed many of the most absurd remedies—as the precious stones and metals, to which such value was attached, on several accounts, that in the ardour of their researches after them, may be discerned the first glimpses of the enthusiasm which marked the alchemical enterprises.

The mind of Europe, plunged, as it was, into the deepest lethargy, did not suddenly emerge, or recover its tone. The presages of its renovation were long in accomplishment, and this slow advancement has very properly been attributed to the pernicious operation of the feudal system. The incessant contentions

of its petty tyrants interrupted the quietude so essential to literary pursuits, and an ignominious vassalage was imposed, which palsied the moral energies below the capacity of vigorous exertion.

As has been truly said, the lily and the bramble may grow and flourish together—but genius and slavery admit not of this social proximity. Wherever the highest order of intellectual excellence has been attained, there we have found neither the turmoils of anarchy, nor the fetters of despotism. To shoot with luxuriance, and bring to perfection its choice productions, genius should be placed in a soil secured from disturbance by the provisions of a regular government, and sustained by the protecting care which such a government is alone competent to afford. But while the austerities of feudal tyranny prevailed, there was not the shortest repose from the distractions of war, nor the least defence against violence and oppression. The nobles had become arrogant by the practice of command, and the people dastardly from the habit of submission.

Of the causes which conspired to abolish this state of confusion and servitude, and to introduce order, regularity, and freedom, the crusades have generally been thought the most leading and efficacious. They aroused Europe out of its torpor, and engaged it in those enterprises which inspire activity, and invigorate intellect. Men, in every gradation of society, were infected with the wild enthusiasm which originated these singular expeditions.—Composed of all the na-

tions of Europe, armies were seen marching in a delirium of zeal, pledged either to redeem the Holy Land, or die at the tomb of Christ.

In prosecuting this romantic project, the crusaders were happily obliged to traverse countries, whose institutions and customs were superior to their own. These could not fail to awaken taste and excite emulation. Captivated by the charms of literature, the more enlightened of them, collecting some of the classical writings and many of the Arabian productions, returned with a sense of refinement, and views widened and liberalized.

Dispositions in every respect so auspicious were strengthened and confirmed by the invention of the art of printing, which, increasing the number, and reducing the price of books, diffused more widely the lights of knowledge, and quickened the speed of moral improvement.

The efforts of literature, however, at the dawn of returning civility, were very unprofitably directed, having been turned either into the course which produces the wild and irregular sallies of the imagination, or lost in the mists of metaphysical intricacies, and the mazes of scholastic theology. The science of medicine appears to have solicited little esteem. But, in the succeeding age, the study of alchymy, or the art of transmuting base metals into gold, and the still more ridiculous attempt to invent an elixir, by which life should be prolonged beyond the ordinary term, engrossed the attention of most of the learned

and ingenious. Experience has shown the futility of these pursuits. Yet intense exertions, in whatever way applied, are seldom wholly unproductive—and, accordingly, in the eager chase of these illusions, contributions of real value were occasionally made to the *materia medica*.

It was from one of these enthusiasts, Basil Valentine, we received some of the preparations of antimony, now in use, perhaps also those of lead, and certainly the volatile alkali, the sal ammoniac, the mineral acids, and alcohol and ether.

Medicine moved on in this devious career, till about the middle of the fifteenth century, when it underwent a revolution which had considerable influence on our department. At the period alluded to, medical knowledge, in Europe, was wholly borrowed from the Arabians. But, on the conquest of Constantinople, the last lingering monument of imperial grandeur, many of the erudite Greeks fled into Italy, and carried with them the ancient writings:—the sciences, now in decrepitude, seeming to cling to a people for protection, by whom they had been nurtured with such devotion in their infancy. Thus taking root, medicine gradually revived and spread throughout Europe, very much, in the first instance, by the instrumentality of the Jews, who, at that time, had more international communication than any other description of persons, and made it equally subservient to the extension of trade and diffusion of liberal knowledge. Conversant with the Oriental

languages, their medical men possessed the exclusive advantage of reading Hippocrates, Galen, and other ancient authorities, through the Arabic and Syriac translations, in which those writers were only to be found, a circumstance that conferred on them a vast superiority of skill and regular science.

After a severe struggle, the doctrines of Galen regained their former ascendancy, which, however, did not long endure, being destined to fall under the formidable attacks of the chemists. The difference between these rival sects, while it related both to theory and practice, turned chiefly on the use of the powerful remedies which the latter derived from the processes of their art.

In this contest, the leader on the part of the chemists, was the celebrated Paracelsus. Destitute of regular learning, he had that sort of audacious genius, peculiarly calculated to sap the foundation of existing systems, and prepare the way for the reception of unexpected innovations.—The cures effected by the energy of his remedies, consisting mainly of antimony, opium, and mercury, and the confident manner in which these were promulgated by himself and his disciples, procured with many the adoption of his opinions, and a wide dissemination to his popularity and fame.

Elected to the professorship of chemistry by the magistracy of Basil, the first instituted in Europe for teaching that science, among the earliest of his proceedings was to burn, while seated in his chair,

with the utmost solemnity, the writings of Galen and Avicenna, declaring to his audience, that if God would not impart the secrets of physic, it was not only allowable, but even justifiable, to consult the devil: Beyond measure arrogant and vain, he treated his contemporaries with the same insolence, and in the preface to his work, entitled, "*Paragranum*," tells them, "that the very down of his bald pate had more knowledge than all their writers—the buckles of his shoes more learning than Galen and Avicenna—and his beard more experience than all their universities."

Despising, or affecting to despise, all which he did not himself possess, on another occasion, he cried out, with a frantic voice, "away with Greek, Latin, and Hebrew."

As might be supposed, he could not, with such a temper, long retain his situation—and, driven out of it by a quarrel with those who had conferred the appointment, he rambled about the country, generally intoxicated, seldom changing his clothes, or even going to bed, presenting the spectacle of squalidness and phrenzy. Boasting to the last of having a panacea which cured all diseases in an instant, and was even capable of prolonging life to an indefinite extent, this drunkard and prince of empirics, "the greatest fool of physicians, and the greatest physician of fools," died after a few hours illness, in the forty-eighth year of his age, at Saltzburg, with a bottle of his immortal *Catholicon* in his pocket.*

* Paris's Pharmacologia.

In speculating on the cause of the successful career of this medical fanatic, we cannot be embarrassed. Consulting the history of our profession, we shall find, that practitioners, who pursue the "noiseless tenor of their way," whatever may be their claims, move on slowly, without notice, and, for a time, advance neither to fame nor fortune. It belongs to the multitude to delight in the wonderful, and to embrace, with eagerness, the marvellous and extraordinary. The glorious orb which steadily dispenses light, and heat, and life, is to them an object of less curiosity and attraction, than the blazing comet, in its eccentric course, shaking down its pestiferous influence.

Why such a propensity should strongly exist, in relation to us, is readily explicable. Disease, as has justly been said, depresses the powers of the understanding, as well as the vigour of the corporeal frame, and depraves the judgment as well as the process of digestion. He, who is sick, is extremely credulous as to the object of his hopes and fears, so that it too often happens, that whoever assures him of health, easily obtains his confidence, and he soon becomes the dupe of quacks and ignorant pretenders.* But the vulgar gaze, and the emotions which it excites, are alike evanescent—and all experience attests, that solid reputation and permanent success in medicine, as in other pursuits, are the rewards only of superior merit and unusual acquisitions.

* Cabanis, &c.

Nor was it only from the stores of chemistry, that our science was enriched at this time. The art of navigation having recently received its memorable improvement, maritime enterprise was emboldened to extend its researches, and the new world, now revealed to an adventurous spirit, poured into Europe its treasures and its drugs.

The Peruvian bark, the jalap, the ipecacuanha, the guaiacum, the sarsaparilla, the two last so important in the cure of the foul disease which was then extending its horrible ravages, and making such inroads upon human happiness, are a few only of the valuable accessions to the *materia medica* at that period.

Elated by success, the chemists, who still kept possession of the schools, urged with fresh ardour their analyses, and, while they rendered their theories contemptible by an extravagance approaching to fanaticism, continued to elicit, by the operations of the laboratory, medicines of the greatest importance, among which may be enumerated, the fixed alkalies, the neutral and metallic salts, &c.

Their triumph, indeed, was now so complete, that reasonings deduced from the peculiar views they entertained were interwoven with every set of opinions and every mode of practice, however varied by lighter shades of difference, or from whatever source they might issue. Those were finally embodied by Sylvius, who became the leader of the sect, in a theory of fever, which supposed it to be an effort of nature

to concoct and throw out of the body matters vexing its economy, or in any way unfriendly to its healthy condition. As a corollary from these premises, he maintained, that perspiration is the natural and efficient process of cure in all such affections—and, conforming his practice to his speculative notions, the most heating and stimulating diaphoretics, and other means, were often employed, without the slightest regard to the inflammatory nature of the case.

No system, perhaps, was ever more fallaciously founded, or productive of wider mischief. Europe felt, for years, its devastating effects. It was reserved for Sydenham, who, with propriety, has been called the “legitimate descendant of the Coan Sage,” to discern and expose its fatal tendency. Like his prototype, carefully watching, and strictly obedient to the suggestions of nature, he at once reformed the whole plan of treating the febrile affections—and, in place of promoting an imaginary depuration by additional heat and augmented stimulus, he recurred to cooling and depletory resources to unload oppression, or reduce excessive excitement.

Cotemporary, or nearly so, with these events, was the discovery of the circulation of the blood, which imparted a vigorous impulse to medicine, and changed very materially its character and aspect. But the light shed by it on the animal economy, instead of leading, as was anticipated by the sanguine enthusiasts of the moment, to some correct and permanent conclusions, which might place the science on a basis never again

to be shaken by the changes of opinion, served only to redouble the rage for speculation and to exacerbate the temper of controversy.

As having no direct bearing on our subject, it would be improper to dwell on the series of conflicting hypotheses resulting from those angry contentions, many of which were the progeny of an unnatural alliance between medical science and the prevalent branches of knowledge.

Medicine has been corrupted in every age by the ambition to apply to it the general theories, or particular views of the other sciences. Its early history shows that it was constantly subjected to the dominant philosophy of antiquity. When chemistry triumphed, we have seen its reasonings intermixed with every set of opinions, and shaping every form of practice. Mathematics came next into vogue, and the functions of the living system, as well as the operations of medicines, were explained on pure geometrical principles. After a while, however, the reign of metaphysics ensuing, we had all its subtilities and abstractions in the place of the preceding parade of data, postulates, and demonstrations.

Thus stood our science at the dawn of the eighteenth century, when three distinguished characters arose, to subvert the authority of their predecessors, and to share the empire of medicine. These were Stahl, Boerhaave, and Hoffman. Each of their systems made a considerable impression on the *materia medica*,

and must therefore not be entirely overlooked in the present review.

That of Stahl, which is rather of the earliest date, evidently grew out of those metaphysical discussions to which I have alluded. It assumes as a fundamental principle, that the *rational soul* of man rules his body in health and disease. No period has, perhaps, existed, in which some indistinct notion has not been entertained of a power resident in the animal economy, by which it is enabled to resist injuries, and to correct or remove the morbid derangements to which it may be exposed. This mysterious faculty has received various names, as the impulsive principle, the soul, or *anima medica*, the *archæus*, the *vis conservatrix*, et *medicatrix naturæ*, the vital principle, the nervous power, and most commonly the vague appellation of *Nature*.

Giving to this faculty more definite attributes, he strenuously maintained that it is independent of any physical necessity, and operates by virtue of its intelligence. Theoretical views like these must inevitably have dictated a cautious, feeble, and irresolute practice. Confiding in the wisdom of the soul, the disciples of this sect were accordingly vigilant in observation, and acute in discernment, though averse to the use of active remedies, lest they might interfere with its sanative designs. To them, we are peculiarly indebted for the art of curing diseases by EXPECTATION, and their practice has, with some propriety, been called, "*a meditation on death.*"

No one could have been better prepared than Boerhaave to construct a medical system. To a calm, reflecting, and discriminative mind, he united the widest range of erudition, and the most patient industry. All the branches of knowledge auxiliary to his profession, he had diligently cultivated. These advantages, however, did not exempt his speculations from the grossest errors.

As a genuine eclectic, he seems, in framing his system, to have been anxious to select from every source the best materials, and to blend these with such as his own genius might supply, into one whole, exhibiting the aggregate truths of the science. But this, like most finely-wrought schemes, did not succeed. Excellent as was the mechanism of the work, the incongruity of the parts could not be concealed. To harmonize the contrarieties of medical doctrines is, indeed, a task as impracticable as to arrange the fleeting vapours around us, or to reconcile the fixed and repulsive antipathies of nature. Boerhaave adopted, in the utmost latitude, the prevailing mechanical and chemical philosophy, and his system bears its full impression on the face of it. Neglecting the peculiarities of vitality, he represented the animal body pretty much as a machine controlled by the laws of hydraulics in the circulation of its fluids. Medicines he supposed to operate chiefly by chemical combinations.

The system of Hoffman differs very widely from those of his two contemporaries. Discerning the

errors of the humoral pathology, he early rejected it. Whatever changes the fluids undergo, he alleged were produced through the intervention of the solids, and denied that they exercise any direct or essential influence on the healthy or morbid states of the body. Believing that the living system is regulated by a vital principle, he retains little of mechanical or chemical reasoning, and very properly seeks for explanations of the phenomena of the animal economy in the agency of that principle, exerted through the primary moving powers. With his subordinate notions relative to spasm, I have nothing to do.

In tracing those systematic arrangements of medical knowledge, which had any decisive influence on the *materia medica*, we must not entirely overlook that of the original and eccentric Brown, the child of genius and misfortune. My intention, however, is not at all to detail the well known doctrines of the "*Elementa Medicinæ*." It will be quite sufficient for my purpose to remark, that this intrepid theorist divides all diseases into two classes, *sthenic* and *asthenic*, or of increased and diminished excitement—and maintains that every agent which operates on the living body is a stimulant, having an identity of action, differing only in the degree of force.

Whatever may be the merit of these views in some other respects, a point, however, exceedingly disputable, they could not fail to produce the worst effects on the *materia medica*. Nothing can be less true than the notion which is here inculcated of the powers and

modus operandi of medicines, or more mischievous than the abridgment of our remedial resources, to which such an estimate directly leads. Let it be conceded, that diseases really consist in graduated proportions of excitement, and that our medicines are weaker or stronger stimulants only, it follows, that a practitioner might sally forth to attack the foes of human health and happiness, armed alone with the lancet in one hand, and a bottle of alcohol in the other, to reduce vigour, or remove debility, as the case might demand. Extraordinary as this may seem, it is still a warrantable deduction from the premises, which were carefully laid down, and so often elaborately defended, by the disciples of this sect, and which they fully illustrated by their practice.

Leaving these bold attempts at medical generalization, I revert to the more direct history of our department. It can hardly be supposed, that, during the last century, when physical science was so studiously cultivated, the *materia medica* should remain stationary. No section of medicine is insulated, and whatever light is thrown upon one, soon becomes reflected over the whole. The improvements which took place in the departments, even in those most distantly related to it, were, therefore, not without effect. As physiology and pathology, the laws of the animal economy in a healthy state, and the doctrines of its deranged condition, were further elucidated, more accurate views were acquired of the operation of medicines, and a happier manner of adapting them

to the management of diseases. But from those branches which are its immediate kindred, the *materia medica* derived its principal acquisitions. Every province of natural history has been tributary to its extension—and to the chemistry of modern times, we owe the highest obligations. Correcting its own errors by the surest methods, it has extended the spirit of reformation to our particular science. While arming practitioners with some of the best means of combating disease, it has, by proving their inertness, caused others to be expunged, and taught the art of preparing and administering remedies with infinitely more neatness, precision, and efficacy.

Of late, indeed, chemistry has outstripped the most sanguine expectations, and, by the minuteness of its analyses of vegetable substances, promises to confer inestimable benefits on the *materia medica*. As is well expressed by a recent writer, opium has at length been compelled to confess its secret source of action, and ipecacuanha to yield its emetic element in a state of perfect purity. Examples of similar purport might now be infinitely extended, so diligent and successful are the efforts in this respect: among which may be cited, as of the first consequence, the extraction of the active principle of Peruvian bark.

During the period under review, much has also been written expressly on the *materia medica*. We have distinct dissertations on many of its active articles, in which the properties are carefully investigated, and not a few works encompassing the whole science.

It is not my intention, at this time, to give any minute account of these productions, as I shall hereafter have occasion, very repeatedly, to recur to the subject. Now, I shall merely mention, that among the numerous works the science claims, there are three, which, by reason of their superior merit, are entitled to be singled out and noticed. These are the celebrated systems of Lewis, Cullen, and Murray.*

The Edinburgh professor was decidedly the most distinguished medical personage of the age in which he lived. He occupied a larger space. His fame was more diffused. Deficient, perhaps, in that transcendant genius which reforms every thing by bold and general views, he had, to compensate it, the faculty of careful observation, and an uncommon share of diligence, sagacity, and judgment. The character of his mind is conspicuously displayed in all his writings, which, though not destitute of speculation, are eminently practical, and have tended, in the greatest degree, to the establishment of true and rational medicine.

Yet, his work on the *materia medica* is not without defects, and, by the changes which medicine, since its date, has undergone, is become, in a certain degree, antiquated, and even obsolete in many of its parts, in theory as well as practice. As presenting in narrower

* I allude here to the work of my friend, the late Dr. Murray, of Edinburgh. The "*Apparatus Medicaminum*," by an author of the same name, I have never till lately been able to procure. Nor have I met with the treatise of Alibert, so highly commended. I have just seen the last edition of Paris's *Pharmacologia*, which, in its way, is a work of incomparable value.

limits a much more correct view of the existing state of the science, reformed as it has recently been by new discoveries and improvements, the treatise of Murray is to be preferred.

No notice has hitherto been taken of the efforts in the United States to advance the *materia medica*.—Engaged as we were, in the early and rude state of our country, in providing the proximate necessities of life, this, and all other subjects requiring liberal leisure, were neglected. It is true, the naturalists, distributed through the different sections of the country, have never been altogether heedless of its physical productions. But their inquiries being directed rather to the botanical history than medicinal properties of plants, very few important accessions were, for a long time, made to the stock of remedies.

As soon, however, as our medical school began to flourish, an attachment was awakened to the science, and it has since been considerably enriched from our native stores. Many of our graduates have signalized their talents by the investigation, in their inaugural dissertations, of no inconsiderable number of the indigenous medicinal plants.

But the credit of leading in this new career is indisputably due to my predecessor in the chair of the *materia medica*.^{*} Confessedly, it was by him, that a real taste for the natural sciences was created and diffused in the United States, the charms and utility

^{*} The late professor Benjamin S. Barton.

of which were ardently and eloquently enforced in his lectures, in his conversation, and by his writings. Too early has he been removed from the sphere of his labours. Emulating, however, his example, those who have succeeded to him in the school, in the several departments of the *materia medica*, natural history, and botany, seem resolute to repair his loss, by pursuing the same radiant path of duty and usefulness.

Nor is it merely by widening the boundary of the *materia medica*, that we have improved it. Too long was it permitted to be overcharged and encumbered by the gradual accumulation of ages, from the intrusions into it by ignorance, superstition, credulity, precipitate observation, or direct imposture. Entering into this vast repository of incongruous and ill-assorted materials, we have, with intrepid decision, expunged the inert and redundant, retaining only such as are powerful and indisputably efficacious. This is the declaration of no arrogant or vain-glorious sentiment. Excepting in Britain, and even there they seem too retentive of frivolous articles, surely the state of our *materia medica* may be most advantageously compared with that of every other of Europe. The French codex, with many excellencies, is disreputable, and still more farraginous are the pharmacopœiæ of all the other countries which I have consulted.

Of many of the heroic remedies, as they are sometimes called, our knowledge, I am persuaded, is unrivalled. Carefully ascertained in their properties,

doses, and modes of exhibition, we give to them a wider, more diversified, and exact application to the cure of diseases. The practice of medicine in every view, in the United States, is pre-eminently distinguished by promptness, vigour, and decision.

Nor is it difficult to assign one, and perhaps the main, cause of our superiority in this respect. Neither perverted by prejudice, nor enfeebled by any undue reverence for authority, the medical mind of the country was every where open to the reception of new impressions, when the pestilence, which has since desolated our cities, made its appearance in a guise so anomalous and violent, as to render the existing principles of the science inapplicable, and to engage us intensely in a wide scope of observation and research. As new lights were elicited, corresponding changes took place, and the spirit of reformation continuing to move on, eventually led to one of those revolutions incident to the history of medicine, in which views were established more pertinent to the condition of the diseases of our climate, and in stricter conformity to the general advance of human knowledge, during a season of such active exertion.*

* The reformation which has recently taken place in Great Britain, in theory and practice, is mainly to be ascribed to the writings of the medical men of the army and navy, who, having observed disease during the late protracted war in climates like our own, were led to similar conclusions. No longer frightened by the "*debility and putrescency*" of the old school, the lancet and its auxiliaries are now as freely employed there as in the United States. On this subject, the admirable works of Jackson and Johnson may be consulted with great advantage.

DISCOURSE II.

The Improvement of the Materia Medica.

CONSIDERATIONS arising from a due estimate of its importance, have led, in every age, to the assiduous cultivation of the materia medica. Long before principles were introduced into medicine, or even the common rules of practice established, no small attainments had been made in this particular department. But studiously as we have endeavoured to promote its cultivation, the materia medica, as a section of medical philosophy, is still crude, wild, and unregulated. We have, it is true, a prodigious collection of remedies. These, however, have been too often chosen with little discrimination, as carelessly investigated—arranged obscurely, and ministered without much accuracy or precision.

In treating of a science so defective, it seems to me proper that I should point out the mode, by which, in my opinion, it may be prosecuted with the greatest success. To such a discussion I am the more inclined, from the singular advantages which our coun-

try holds out to the extension and improvement of this branch of medicine.

Nature has cast the new world in her largest mould, and given to many of its productions corresponding proportions. No instance of stinted or niggardly creation exists. Every where we behold the evidence of a physical luxuriance, equalled only by the moral and intellectual energies of the people. Even our diseases partake of the same character, and frequently have a violence, which exacts for their cure, either new means, or original combinations of vigorous practice.

But most evils have their correctives, and it would seem especially to be a part of the benevolent scheme of Providence, that the malignant distempers incident to a climate, should be invariably associated with their appropriate remedies. If this be the case, can there be a nobler field to excite or reward exertion, than that which lies before us? The immense regions which we claim, though hitherto little explored, are known to be exuberant in the most active vegetables. It is more than probable, that on some of the Alpine heights, or along the margin of those bold streams which pervade our wide-spread continent, there blooms many a plant, whose virtues, now flung on the "desert air," may be peculiarly adapted to the gigantic forms of disease, and capable of reducing the lengthened catalogue of the *opprobria medicorum*.

To aid those who may be disposed to enter on so useful an enterprise, I shall now proceed in the first place to review, somewhat in detail, the various means which have been suggested, in order to acquire a knowledge of the medicinal virtues of substances, and to show how far they are applicable to the purpose.

Of the means alluded to, it is reasonable to suppose, that the sensible qualities of the article, by which are meant its odour, taste, and colour, were the first employed. To these criteria we are obviously led by a very strong instinctive impulse. No one can pick up an unknown plant or substance, with a view of ascertaining its properties, without at once subjecting it to the decision of one or the whole of the senses. To the rude and educated man, as well as to the brute creation, it is incident to practise this mode of investigation. But, whatever advantages the savage or the lower animals may derive from the acute perceptions of the organs of sense, we are little indebted to this source in our medical researches.

The utility of smell is limited chiefly to vegetables, as few animal or mineral bodies betray their qualities to this sense. Generally, pleasing smells, according to Linnæus, are innocent, while rank and nauseous ones are injurious. But pleasing and nauseous are relative terms. The odour which is grateful to one person, may be to another loathsome and disgusting. Yet this is a criterion, perhaps, not wholly to be disregarded. The odours of medicines he di-

vides into aromatic, fragrant, ambrosial, alliaceous, hircine, stinking, and sickly. These, though not susceptible of any very precise definition, we have no great difficulty in recognising, and to most persons are sufficiently familiar.

The *first* is generally stimulant and transiently corroborant—the *second*, analeptic, and sometimes antispasmodic—the *third*, powerfully so, and likewise cordial—the *fourth*, actively stimulant, bracing the nerves, and exhilarating the spirits—the *fifth*, sedative and deleterious—the *sixth*, anodyne and poisonous—the *seventh*, narcotic—though in its primary impression it proves so offensive as often to puke or purge.

His arrangement of tastes is into *sweet*, commonly nutritious—*acid*, heating, corrosive, and irritating—in large doses emetic, and externally rubefacient and discutient—*fat*, demulcent and nutritive—*styptic*, astringent and tonic—*acid*, refrigerating and diuretic—*bitter*, tonic, and in some instances purgative—*viscid*, demulcent, expectorant, and nutritive. From the *salt*, the *watery*, and the *dry*, which, with the preceding, comprehend the whole of his divisions, no inference deserving of notice is to be deduced.

Tastes, it is affirmed, have a much more intimate connection with the medicinal properties of substances than odours. This is perhaps true. Like smells, however, they are so infinitely varied, that an accurate discrimination is not easy to be made. Much of what I have said in relation to the one, is equally applicable to the other. I shall therefore merely re-

mark, in addition, that certain medicinal virtues are found pretty constantly associated with peculiar tastes and odours, and will lead to a tolerably satisfactory conclusion, where these are simple and unmixed. But, if compounded, which is usually the case, we ought always to hesitate in deciding, as, amidst the confusion of blended sensations, there can be nothing certain or definite.

Cullen maintains, that such substances as do not affect the taste or smell, or only in a slight degree, may be considered as inert and useless. To this rule, which is indisputably of very extensive application, there are not wanting some striking exceptions. Not to mention other conspicuous instances, the corrosive sublimate, arsenic, antimony, and the poison of serpents, are equally insipid and inodorous.

As a test of medicinal virtues, it seems to be admitted, at present, that colour is entitled to less confidence than either of the two preceding criteria. But a different opinion was once entertained, and especially by the celebrated naturalist of Sweden, as it is expressed in this memorable aphorism: "*Color pallidus, insipidum—viridis, crudum—luteus, amarum—ruber, acidum—albus, dulce—niger ingratum* indicat."

Each of these positions, though true in the main, is to be received with many limitations, and on this account, the mere circumstance of colour will always prove a devious and precarious guide.

In the enthusiasm of that period, when chemistry, as a novelty, attracted great attention, it was imagined

that the processes of the art would illustrate every physical obscurity, and, among the rest, reveal the medicinal properties of substances. During the reign of the humoral pathology, these extravagant expectations were also sanguinely indulged. As applied here, the powers of chemistry cannot be trusted. Experiments have fully demonstrated, that articles widely discrepant in their general nature, as aliments and medicines, the most salutary food, and the rankest poison, frequently exhibit, on analysis, nearly the same results. This indeed holds so generally true, that the virus of the viper and the mildest mucilage, the poisonous prussic acid and the nutritive flesh of animals, constitute no exception. Decomposed into their elementary principles, they are essentially the same.

Chemistry, however, in other respects, is of the utmost importance to the *materia medica*. Copious in resources, this noble science explores all nature, and educes from each province the most valuable remedies. The animal, the vegetable, the mineral kingdoms, it lays under contribution for our purposes, and by it we are moreover taught neatness and precision in our pharmaceutical preparations.

As soon as botany assumed a regular shape, and was reduced to system, it was perceived, that many of the plants which had been arranged together from their agreement or affinity in botanical characters, were also allied in medicinal virtues.—Nature having established, in not a few instances, a connection of this sort, it was presumed that she had done so uni-

versally. Classifications were accordingly made on this hypothesis, and, to a certain extent, proved to be correct. There is, especially, one of the great divisions of Linnæus, embracing a very large number of plants, which scarcely exhibits an exception. But so far from this coincidence prevailing throughout his classes, it frequently does not obtain even in the species of the same genus. As proofs to this effect, I may mention the *cucumis melo*, or common melon, and the *cucumis colocynthis*, or colocynth of the shops. Nor is the difference less, in a medicinal and dietetic view, between the *solanum tuberosum*, or potatoe, and the *solanum nigrum*, or black nightshade. Examples of this kind it would be easy to multiply, were not those already adduced sufficient to show the fallacy of the criterion, as well as the extreme danger which might result from carrying it into practice, without proper care and circumspection.

Exactly on the same footing stand the conclusions derived from what is called the natural order or assortment of plants. Many vegetables, resembling each other in their general aspects, do not disagree in their medicinal properties. But this does not always hold,—and, among the instances to the contrary, may be enumerated the *digitalis*, and the *verbascum*, or common mullein in our fields, each of which is included in the same natural family, though the one is as active as the other is mild in its effects. Nor is this all. Different portions of some plants are possessed of very opposite qualities, as we see striking-

ly illustrated in our own *podophyllum peltatum*, or may apple, the leaves of which are poisonous, the root powerfully cathartic, and the fruit agreeably esculent. What, on the whole, physiognomy proves in relation to the human character and dispositions, the exterior appearances of plants perhaps show as to their virtues and powers. Each sometimes acquaints us correctly, though he who implicitly trusts to either, will often have reason to complain of his misapprehension and disappointment. As a general rule only can the maxim be admitted,

“*Quæ genere conveniunt, virtute conveniunt.*”

Culture, the varieties of soil and of position, as well as climate, have all, moreover, a very decisive influence in modifying, or essentially changing, the properties of vegetables. Raised in a very rich soil, chamomile flowers lose their medicinal virtues—and some of the milder plants, we are told, transferred from a dry to a wet position, become deadly poisonous. It is further affirmed, that the rhododendron is so much affected by such influences, as to be narcotic in one spot, cathartic in another, and in a third endued with quite other properties.* The same happens with the assafoetida. It undergoes such a modification as to lose its nauseous odour, and to become esculent to goats.†

Examples of similar conversions, by the effects of climate, are numerous, and so familiar as scarcely to

* Gmelin.

† Woodville.

require any specification. We may mention, however, one or two instances in illustration. The senna, by removal from its *solum natale*, is altered, both as regards its external configuration and its medicinal virtues: and in no less degree is the chenopodium anthelminticum. To a certain extent is it also the case with the poppy and the henbane, each suffering a considerable diminution of power by transplantation to other regions. We say nothing of the effects of the extremes of climate on the character of vegetables, as being sufficiently known.

Let us not, however, disparage the utility of botany. To ascertain the identity of any plant, which the arrangements of this science enable us to do, is an object of no minor consequence. Deprived of the aid which it lends, the greater part of the experience of our predecessors would be lost to us. We should have to start anew in our investigation of plants, and, like mariners cast on a desolate shore, move through unexplored regions with a step slow, faltering, and retarded.

Not the least of the extravagancies which marked the wild career of Paracelsus, was the inculcation of the notion, that such plants as bear a resemblance to any one part or constituent of the body, have a peculiar efficacy in relieving its disorders. Thus, the *euphrasia*, even at the present time, from a continuance of this impression, is used in the complaints of the eyes, because it has a black spot in its corolla, resembling the pupil—and the *pulmonaria* retains not

less reputation in the affections of the lungs, since in its form, its texture, and its areolæ, it is not altogether dissimilar to these organs. Turmeric, being yellow, is, on the same principle, thought useful in jaundice, and some red plants are prescribed for the suppression of hæmorrhage.

Exploded as it is, wherever intelligence prevails, nothing except the desire to preserve something like a regular chain in my present narrative, would have induced me to notice, as one of the means of ascertaining the virtues of plants, this old and absurd doctrine of *signatures*.

To determine the powers of medicines, it was formerly the practice to make experiments on the fluids taken out of the body. This was more particularly the case, while the doctrines prevailed, which supposed disease to depend on a depravation of the blood or other fluids. To the disciples of this sect, the operations of the laboratory were considered as presenting a faithful image of the actions of the living system, and hence they were very naturally seduced into this course of inquiry. Not the slightest advantage, however, has accrued from such visionary projects. Those who were deluded by them, ought to have recollected the peculiarity of vital power, and how much the changes which the fluids undergo are influenced by impressions made through the intervention of the solids.

In pursuit of the same end, it has been not less the custom to experiment largely on the brute creation,

and on the first view, it promised the most interesting results. More correct experience, however, has taught us that it cannot be trusted. Different animals, we have discovered, are variously affected by the same article. What is food to one, may be to another an active medicine or a virulent poison. Thus, cows and hares eat hemlock : hogs, henbane and hellebore : goats, nicotiana and euphorbium—and some birds, the laurel berry. The powerful antimonial preparations are comparatively feeble on a horse—and a dog, which can take three times as much opium as a man, may be thrown into convulsions, or perhaps killed, by a moderate dose of jalap, or even by a few bitter almonds.

Disappointed in their anticipations from the preceding modes of inquiry, the cultivators of the *materia medica* were ultimately driven to make their trials on the human species. But doomed, as it would seem, to perpetual fallacy on this subject, they restricted their experiments chiefly to the system in a state of health. Nothing could be more inconclusive. Disease so materially influences the condition of the body, and its susceptibilities to impression, that the agency of substances, is, in consequence, very strangely modified, and in many instances entirely changed. Nevertheless, such investigations are not to be contemptuously rejected. They will sometimes serve, at least, to acquaint us with the general powers of the article. That, however, they may be conducted to any practical purpose, the phenomena produced by the sub-

stance, in different doses and in different states of the system, must be carefully watched, and faithfully reported, not only as indicated *by the pulse*, but as displayed in *every part and function* of the animal economy.

Great errors have been committed by inattention to these precepts. Even in the very best of our investigations of medicines, we find nearly an exclusive regard paid to the state of the circulation, its acceleration or retardation, its augmentation or diminution of force and volume. Directed by their peculiar affinities, there are many of our medicines, which, leaping over, as it were, the blood-vessels, expend their energies on the nervous, the muscular, the glandular, the cutaneous, lymphatic, or some other subdivision of the general system.

By more than one enthusiast it has been assumed, that all medicines are similar in their operation, differing only in degree of force, permanency, and diffusibility. My own conviction is, on the contrary, that we should approach much nearer the truth, by considering every article, or, at all events, congeners, or assortments of kindred articles, as endowed with peculiar powers, and having a relation or affinity to some one organ or portion of the body.—But more of this hereafter.

As yet, then, no means have been mentioned of ascertaining the medicinal virtues of substances in which we can implicitly confide. The sensible qualities of the articles, chemical analysis, botanical affinity, experiments on dead matter, on the lower ani-

mals, or on the healthy human system, may conduct us, in most instances, to a tolerable knowledge of its general nature, but can never be adopted as safe criteria for practical purposes. Experience of their effects on the body in a diseased condition, is the only mode of determining the virtues of medicines. The subject is strictly clinical in its nature, and such inquiries can alone afford a correct result. It is at the bed-side of the patient, I repeat, in the language of a great writer, that our knowledge of medicines is to be acquired. By examining, continues he, by touching, viewing, smelling, and tasting, we learn to know the different articles of the *materia medica*. It is by seeing them decomposed and compounded, and by observing the qualities of the products, or new combinations; that we receive just notions of their chemical properties: it is by witnessing their properties in a laboratory, by preparing them ourselves, that we form a clear idea of their transmutations, and of the different properties which the different modes of preparation may impart to them: and it is only in the course of a long and extensive practice, that we become acquainted with the real properties of medicines, and learn to appreciate them, not in a vague manner, but by their real effects, circumscribed or determined with accuracy, and with reference to the particular cases in which they have been observed.* But even this course is liable to fallacy, and its dictates must be received with doubt and hesitation.

* Cabanis.

Medical conclusions differ very widely from every other species of evidence. We cheat ourselves by a thousand illusions, and have imposed upon us still more deceptions. It is not necessary that I should enforce this remark by the enumeration of any examples. No one, who is conversant with the practice of physic, need be told how often his own deductions have proved erroneous, or how little credit those pompous recommendations deserve with which medicines are daily promulgated.

The celebrated Vogel professed to assign to substances such properties only as had been accurately learnt from accumulated experience : yet in his *rectified* catalogue, we have a roasted toad as a specific for gout : and he assures us, that a person may secure himself, for a whole year, from angina, by eating a roasted swallow !!*

If, therefore, we cannot trust to experience, what must be our resource ? There is a true and a false experience. The latter, which is the creature of ignorance, or results from ardent and precipitate observation, may be distinguished by a careful scrutiny, and ought to be repudiated. Yet, it must be confessed, that it is exceedingly difficult to determine the precise powers of a medicine.

Experiments on this subject present many obscurities, and are liable to various inaccuracies. Distinct from other perplexities incident to the case, we have to encounter the original idiosyncrasies of the constitu-

* Paris's Pharmacologia.

tion, or those fluctuations of condition induced by disease, or by age, temperament, habit, climate, the season of the year, and a variety of other causes.

Applied in different states of the system, or in different quantities, the same medicine will be productive of very different effects. This is, indeed, so emphatically true, that we can hardly ever pronounce with certainty what will be the exact results from the dose exhibited. Hence it is, that we have always had so much controversy respecting the powers of medicines, and find, even at the present time, the articles of the *materia medica* so oppositely arranged, and their properties so contradictorily described, in the treatises on the subject.

Consulting these, we shall meet the same substance sometimes noticed as an emetic, at other times as a purgative—now as a diaphoretic, a diuretic, or expectorant—and next as a stimulant or a tonic, an aperient or astringent. The uncertainty, indeed, is so great, that we cannot uniformly decide whether the medicine has been productive of any effect—and the difficulty is often not less, where effects are conspicuously displayed, how much of these is to be imputed to its operation.

To arrive at a satisfactory conclusion on these points, it is indispensable, that experiments should be carefully repeated by different persons, so that any errors may be revised—and on different patients, in different diseases, and under different circumstances, as regards condition in society, the place of abode,

whether in a ventilated apartment, with the comforts of home, or in a crowded ward of an hospital, with its inconveniencies and privations.

Taught, however, by this mode, the virtues of a substance in a simple state, we are next to inquire how far these may be injured or improved by a combination with other matters. It was a practice with the older physicians to incorporate a vast number of articles in the same prescription. This luxuriance was no doubt often mischievous, as ingredients wholly discrepant were associated, counteracting each other in their operations, and producing effects not at all anticipated. But, in the rage for reformation, it is not uncommon to step beyond the proper limits—and in every science, as in human affairs, it becomes salutary to review, at stated periods, what has been done, to correct the consequences of intemperate zeal, and to endeavour to hit the medium between the conflicting extremes.

Of late, the formulæ of practitioners have been marked by a simplicity which is commendable. To me, however, it seems to be sometimes pushed too far, and that, consequently, certain compound preparations are discarded, which were unquestionably of great value in the hands of our predecessors.

To check, in some degree, this tendency to excessive refinement, it will, hereafter, be shown by examples, that combination in our prescriptions is, in many instances, eminently advantageous, by rendering the exhibition more convenient, and that, while it imparts

new powers, it increases the efficacy of the articles. In this I have been anticipated by the learned and sagacious Fordyce, who has published a very able paper on the subject, in the Medical and Chirurgical Transactions of London, to which I beg leave to refer. This subject is also well considered by Dr. Paris in his incomparable work on Pharmacology. I shall now only remark, that, in my opinion, the *materia medica* promises to be much more improved by a diligent and careful attention to the composition of medicines already known, or by the study of what may be termed the *art of prescribing*, than by the introduction of new articles—and that, in conducting our inquiries, we should not too much regard the solemn denunciations of the *ultra* chemists of the union of substances, which they are pleased to consider as incompatible. The physician ought ever to recollect, that he operates on a living system, to which the analogies of dead matter do not apply. He is to bear in mind, as was well expressed by the highest authority,* that the stomach has a chemistry of its own, and carries on processes totally unlike those of the laboratory.

All these preliminary points being settled by a series of clinical observations, carefully made under every diversity of circumstances which can shed light on the properties of a medicine, we are lastly to seek for the several indications of its use. Limited, indeed, would be its value, were its application confined to the

* Dr. William Hunter.

case only in which it was first discovered to be serviceable. But, to trace the multiplied relations of a medicine to disease, the exercise of the higher faculties of the mind is demanded, and we at once introduce the spirit of speculation, or what is termed reasoning, in medicine.

Nothing has been more prejudicial than the abuse of this noble prerogative. Consulting the records of our science, we cannot help being disgusted with the multitude of hypotheses obtruded upon us at different times. Nowhere is the imagination displayed to greater extent—and perhaps, says an eloquent writer,* so ample an exhibition of the resources of human invention might gratify our vanity, if it were not more than counterbalanced by the humiliating view of so much absurdity, contradiction, and falsehood.

The number of preposterous theories should not, however, continues he, create an antipathy to the term, nor must a panic terror of them drive us from the sacred abodes of philosophy. To be hurt with the imperfect and puerile commencements of reasoning in physic, and to relinquish the hopes of rational theory, is to be offended with the prattle of infancy, and to expect nothing better from maturer age.

* The venerable M'Clurg, of Virginia. Nearly half a century has elapsed, since he gave to the public an experimental inquiry relative to the bile, with a preliminary disquisition, in defence of reasoning in medicine. It is from this eloquent production, I derive some of the leading thoughts on this subject.

To exclaim against theory, has been considered as a proof of an ardour for observation. But is it not really to declare, that we must rest stupid and indifferent spectators of the events constantly passing before us? To think, is to theorise. We cannot contemplate facts for a moment, without perceiving some relation between them, and the very discovery leads to classifications. To deny its utility, therefore, is to clip the wings of genius, to banish invention from the science, and to limit it to the dull registering operations of memory alone.

Experience, by which I understand that species of knowledge which is acquired by frequent investigation of the same subject, has been much insisted upon, as the only guide to successful practice in medicine. Were this well founded, it would only be necessary diligently to attend the receptacles of the sick, and any well-trained nurse might be brought to excel the most enlightened and regularly educated physician. Let this principle be once admitted, and our practice becomes a blind routine, without reason or reflection—and the profession, instead of being studied as heretofore, as a science, will be considered merely as a mechanical art, and exercised only as a low and vulgar trade. Can we consent to this degradation? As well might we compare the mere flutterings of the meanest and the most groveling bird, with the bold and well-sustained flight of Jove's own imperial eagle, as those slow processes of a vulgar intellect by which facts are collected or observed, with the vigor-

ous sallies of speculative genius, which seize truth, as it were, by intuition, and reveal it in a burst of light of celestial brightness.

Nevertheless, while we cherish a due attachment to theory, we ought not to despise the humbler employment of observation and experience. There is a natural alliance between them, which should never be dissolved. Let our zeal for speculation be tempered by the recollection, that, before we can raise the edifice, the materials must be supplied, which can only be done by the unwearied exertion of this inferior species of diligence. Certainly, the annals of medicine are already sufficiently crowded and deformed with the abortions of theory, to moderate our ardour, and to create, in future, some degree of restraint and circumspection.

Not the slightest of the causes which have conspired to retard the progress of physic, is the eagerness for rash and indiscreet generalization, by which, at all times, it has been distinguished. But if ever we are to strip our art of its "glorious uncertainties," and bring into the practice of it something of exactness, it will be by pursuing a very different course. To effect so important a revolution, we must studiously examine the phenomena of disease, and, with an attention no less unbiassed, observe the operation of medicines. Thus, perhaps, we shall ultimately learn to discriminate accurately the diversified shades of morbid action, and to apply to each its appropriate remedies. As it is, we are plunged into a Dædalian

labyrinth almost without a clue. Dark and perplexed, our devious career, to borrow the fine illustration of a favourite writer, resembles the blind gropings of Homer's Cyclops round his cave.

It is a popular opinion, which has not wanted the countenance of persons of intelligence, that medicine is necessarily a fallacious art—having its origin in credulity, and which by no exertion can be made to approach towards certainty and truth. They allege, that the animal machine is infinitely too delicate and complex in its fabric ever to be ascertained by human sagacity, and hence its derangements will continue to be vaguely understood, and the reparation of them, by our remedial resources, of course, doubtful and precarious.

Exhibited in this light, the profession of medicine becomes exceedingly debased, and, were this representation of it just, should cease to be an object of liberal inquiry or enlightened regard. Declining at present any formal examination of this subject, it may, however, be permitted me, in closing this discourse, to indulge in one or two general reflections which press upon me.

Medicine is a science of observation and induction. Conceding this, it follows, as a necessary corollary, that, when properly cultivated, we can as certainly, though perhaps with greater difficulty, arrive at as definite conclusions in it, as in almost any other department of physical knowledge. All that is exacted in the study, either of the sound or morbid

states of the body, is vigilantly to attend to the phenomena presented, to mark the order in which they occur, as well as their mutual relations, and so to arrange them, that this order, and these relations, may be easily perceived.

Nor is it true, as has been commonly thought, that a precise acquaintance with the vital principle is indispensably necessary, as a pre-requisite to the advancement of our science. The nature of a principle may remain inscrutably concealed, and still the laws of its action be perfectly determined. Of this, the modern, or inductive philosophy affords many striking proofs, in the specimens of its more splendid generalizations.

Encouraged by the success which has attended the application of the true methods of research to some of its kindred sciences, we should imitate this course, and endeavour to do the same with medicine. In this undertaking, we are called to unite our efforts, not more by a sense of professional duty, than by obligations of a still weightier description. We live in times, and in a country, singularly propitious to enterprises of intellect, and the schemes of reformation.

Availing ourselves of the privileges we possess, and animated by the noblest impulses, let us cordially co-operate to give to medicine a new direction, and attempt those great improvements, which it so imperiously demands. Even if we should not arrive at that point of absolute perfection, which has some-

times been, perhaps too sanguinely, predicted, we may, at least, "by infusing into the science the genuine spirit of reason and philosophy, render it richer in glory, and more fruitful in benefits to mankind." But a higher reward awaits our exertions.

Let us only pursue, with a steady and undeviating perseverance, that track of correct philosophising which has been indicated, and we cannot fail to place medicine on a basis so solid, as never again to be convulsed by the revolutions of opinion or vicissitudes of fashion, but which shall endure as a monument of our triumphant industry, unimpaired, amidst the waste of ages and the ravages of time.

SECTION I.

The Modus Operandi of Medicines.

NOT a little difference of opinion prevails on this very intricate question. The only point in the controversy which seems to be conceded, is, that the operation of medicines does not depend on any of the common laws of matter, but on a principle incident to vitality alone.

“ Medicamenta non agunt in cadaver.”

This being so universally admitted as even to become one of the established maxims of the schools, it may be right, before we advance further into the discussion, to endeavour to fix our notions in relation to the nature of life. But, as speculations of this sort, indulged to any extent, would be here misplaced, I shall exhibit my views of the subject, in as narrow a compass as possible.

Of the various doctrines of vitality, one only appears to me to be well founded, and consequently de-

serving attention. It presumes, that every animated body, animal or vegetable, is endowed with a *primordial principle of life*, which, resident in the egg of animals, and the seed of plants, constitutes the power by which, in the first place, the various organs are moulded, developed, and perfected, and by which, afterwards, the animal economy is defended against the action of mechanical and chemical laws.

Located, perhaps, in the highest degree, among the digestive and assimilative organs, it enables them to change or destroy the qualities of the substances exposed to their operation, without sustaining in return the slightest injury or change. It would hence really appear, that, instead of matter, whether aliment, drink, or medicine, acting on the living system, as is commonly imagined, it is, on the contrary, the living system which operates on these matters. But such is the case only, when the vital energies are in a vigorous and healthy condition. Different, indeed, is the result; where, from debility or other imperfection, the vital organs are rendered unfit to act upon substances, or of resisting the action of substances on the system. Whatever is taken into the stomach under such circumstances, preserves its properties unaltered, or undergoes the same sort of alteration, which it would do out of the body, or beyond the sphere of the vital powers. Each article in this state obeys the order of its affinities—and the changes which occur, are purely chemical. Common matter now acting by its own laws, the system, thus languid and decayed, sinks un-

der an attack it cannot repel, and the processes of fermentation and putrefaction ensue, which, if not timely arrested, become the precursors, as well as the causes, of death and destruction.

Life, therefore, may be defined the principle, or power, by which the system preserves its own integrity unimpaired, and its several parts from decomposition, amidst the action of surrounding agents; while it acts upon things foreign to itself, assimilates them to its nature, and appropriates them to the supply of its exigencies, or to the redress of its injuries.

The theory I shall propose, of the operation of medicines, alleges, that they all act by exciting a local impression, which is extended through the medium of sympathy. By many, however, it is still believed, that certain articles, at least, enter the circulation, and produce their effects in this way.

This last hypothesis is evidently a relic of the humoral pathology. By the disciples of that sect, it was held, that disease mainly consists in a depravation of the blood, "from too great tenuity or visciditv—by an excess of acid or alkaline acrimony, by morbid matter entering from without, or generated within."

As a necessary consequence of such notions, medicines were supposed to penetrate into the circulation, and, by a sort of chemical action, to correct the vitiated condition of the fluids, and hence the origin of the terms, inspissants, attenuants, antacids, antalkalines, antiseptics, diluents, demulcents, &c.

To demonstrate the fallacy of these speculations, by any very minute detail of facts or reasonings, cannot now be required. All changes in the condition of the fluids are wrought by impressions made through the intervention of the solids. Not the slightest proof exists, so far as I know, of the blood undergoing any mutation, either by spontaneous action, or from the introduction of foreign matters, much less, that such is the cause of disease, or the mode in which remedies operate.

To reach the circulation, medicines must pass either by the lacteals, or lymphatics. Notwithstanding the recent evidence to that purport, I remain wholly incredulous as to venous absorption. Microscopical observations show, that between the termination of an artery and the beginning of a vein, there is no interruption of continuity—and, as regards the lateral openings or exhalents, they are evidently designed to excrete, and not, under any circumstances, to receive or imbibe fluids. Nor is it less in contradiction to all analogy, to suppose, that such dissimilar means should be provided to effect the same end. The blood-vessels and absorbents are manifestly destined to perform distinct offices in the animal economy. To cite the experiments of Mr. Hunter, by which this antiquated doctrine of venous absorption is so satisfactorily refuted, seems to me unnecessary, as I can discern nothing in the recent inquiries, by which they are invalidated. Yet, I do not doubt of the existence of absorbents, of the nature of lacteals, which arising in the intestines, terminate

in the portal circulation. That such is the case in the fœtus, as regards the liver, I have long maintained, as the only probable mode of its nourishment, that organ here separating the nutritive from the recrementsitious matter, which last is thrown off in the shape of bile, constituting probably the meconium found in the bowels. To a certain extent, the same function seems to be continued after birth. The various matters thus conveyed to it are acted upon by the liver, and so digested and assimilated, that, after escaping from the portal circulation, they can no longer be detected.

Now it seems more than probable, whether conveyed by either set of absorbents, that the powers of medicines would be so neutralized by the preparatory processes of animalization, as to be deprived of all activity.

Can it, indeed, be credited, that any substance, after a subjection to the digestive and assimilative powers, retains, in the slightest degree, its original properties? Experiments, on the contrary, show, that chyle, however diversified the materials may be, out of which it is formed, whether animal or vegetable, has essentially an identity of nature—and, instead of being a *crude*, as is commonly imagined, is, in reality, a highly *elaborated* fluid, having many, and perhaps all the properties of blood, except its red colour. Three of the constituents of blood, it at least contains.

1. There is one portion of chyle, which preserves its fluidity during life, but coagulates after death, by exposure to the air, and is probably fibrine.

2. There is a second, which resembles serum, in continuing fluid when exposed to the atmosphere, and in coagulating at the same degree of temperature as serum.

3. There is a third, consisting of globules, similar to those of blood, with this difference only, that they are much more minute.

The fact of the perfect and uniform constitution of chyle, seems to me, at once, to put down the hypothesis which I am combating.* It may, however, be said, it proves nothing in the case of medicines administered otherwise than by the stomach, as when applied to the surface of the body, or introduced into the bowels. To this objection the answer is obvious, and I think satisfactory.

No one who has carefully attended to the phenomena of the absorbent system, can help admitting, that every section of it is endowed with the power of *digestion* and *assimilation*, and the lymphatics quite as conspicuously as the lacteals. This capacity is given, as a provision of nature, to exclude noxious matters from the circulation.

* In contending for the identity of the constitution of chyle, I mean only that out of whatever materials it may be formed, it uniformly presents similar ingredients in the same class of animals, which, however, may vary in their proportions, as happens with the blood—and in which I am supported by the recent analyses of the fluid.

The absorbents, in most instances, are fully adequate to this end—and, when otherwise, the substance penetrates to the first conglobate gland, which takes on inflammation, and arrests its further progress—these organs acting here as centinels, guarding the exterior approaches of the body. That some of the properties of certain articles are displayed in the secretions and excretions, I am not disposed to deny. But it does not hence follow, that these substances entered the circulation in their primitive state. Directly the reverse, indeed, seems to be proved, as none of them can be detected in the serum of the blood.

To me it is clear, that the process of assimilation, as performed either by the chylopoietic viscera, or by any part of the absorbent apparatus, completely decomposes all substances,—and, however discrepant in their properties, reduces them to a homogeneous fluid, fitted for the purpose of nutrition. But, when thrown into the secretions or excretions, being removed beyond the control of the vital energies, chemical affinities are sometimes again brought into play, by which these substances are, in part, or wholly, regenerated.

No slender support is given to this hypothesis by the well known fact, that matters are found in such positions, which had not previously existed, in any cognizable state, in the blood. Thus, certain articles can only be detected in certain fluids, as the odour of garlic in milk, of asparagus in urine, of sulphur in

the perspiration,—and the colouring principle of madder is to be traced in no part of the solids, except the bones, and their immediate appendages, the cartilages. Even here all do not exist in their original state, being altered in colour, or entirely destitute of some other property. Did these articles pre-exist in the blood, instead of being regenerated in some such manner as I have stated, ought they not to be thrown out indiscriminately by all the emunctories?

Whether this explanation be received or not, it must at least be acknowledged, that no substance, in its active state, does reach the circulation, since it is shown, that a small portion even of the mildest fluid, as milk or mucilage, oil or pus, cannot be injected into the blood vessels, without occasioning the most fatal consequences.

Twenty-three years ago, in conjunction with my friend, the late Dr. George Lee, then resident in the Pennsylvania Hospital, I instituted a series of experiments to this purport. The articles enumerated above were tried in succession, together with some others of an acrid and stimulating nature, on dogs and cats, the animals selected on the occasion. But diversified as these substances are, we could discern no material difference in their effects, the whole seeming to act merely as extraneous matter in *error loci*, producing, at first, great distress to the animal, as was indicated by its movements and cries, followed by difficult panting, respiration, vomiting and purging, nervous tremors, convulsions, and death. To the

same conclusion Dr. Seybert was led, from a series of experiments. I can admit only a single extract from his interesting publication on the subject. "It is evident," says he, "that cathartic and emetic medicines, when injected into the blood vessels, cannot operate in a specific manner. In almost every instance evacuations were the consequence of the experiments, when neither cathartics nor emetics were employed. Probably any matter capable of producing a sufficient irritation, will produce these effects, when thus thrust into the vessels."* Experiments very analogous to the preceding have recently, I understand, been made by Professor Caldwell, and with confirmatory results.

That the late inquiries of Sir Everard Home and others lead to a different conclusion, I am aware. Confiding, however, in the accuracy of our own observations, I must, in the present state of the question, still maintain, without the slightest qualification, the position I have assumed. The fact is, that though the blood be alive to impressions, and, perhaps, even more exquisitely than the solids, it being designed that all matters should be excluded the circulation, they lose their specific mode of action when introduced, and cause confused and disordered movements, like an irritant in the trachea, or in any other unnatural situation.

Conceding, however, to the humoral pathologists

* Inaugural Essay, University of Pennsylvania, 1793.

all that their doctrine demands, still insuperable difficulties remain in the way of its adoption, to account for the operation of medicines. Not to dwell tediously on the subject, I shall content myself, at present, with merely mentioning, that we are not at all informed by it, why our remedies, after mixing with the blood, should be directed to one organ in preference to another, as mercury to the salivary glands, or how indeed they operate at all. But it has been alleged, though untruly, that the same difficulties oppose the explanation by sympathy. It is a notorious fact, that between medicines and portions of the body, an intimate and specific relation exists, and which indeed constitutes the basis of the classification of the *materia medica*. The contrary notion, of their being conveyed by the circulation to particular parts, is utterly gratuitous, and no less improbable. What intelligence directs them in this voyage of circumnavigation to the port of destination, and how, on their arrival, admitting it to happen, are they separated from the great mass of fluids in which they are enveloped? Nor can I discern the mode in which the rapid stream of the circulation by which they are wafted along becomes arrested at any one point, for their deposition and efficient operation. Let the contrary be contended for, or that they become subdivided and intimately mixed with the blood, and the difficulty is only increased. Thus divided, and so diffused as no longer to be detected by any test, who can believe, that a few grains of the prussiate of potash, or of mer-

cury, or of any other of the articles alleged to enter the circulation, are productive of any remedial effect? Would not the most active substances in such state of disgregation, applied to the most susceptible surface, prove inert? Can the enduring operation, which is sometimes experienced from a single dose of medicine, be reconciled with any such supposition? Do we not also know, that the blood is perpetually undergoing changes, that its renovation is an unremitting process, that its fluid parts are so quickly eliminated by emunctories, that substances affirmed to have pre-existed in it, are found in a very short time, even half an hour in some instances, in the excretions?

By the *medication* of the blood, moreover, were it possible, I insist that we must in all instances do harm. The whole mass of circulating fluids is equally charged in this case with the medicinal substance, and, therefore, while an action is going on in a diseased organ, which may be salutary as to it, every sound part of the system becomes exposed to a similar impression, which could not fail to disturb the order of health, and create morbid derangements.

If it be alleged, as it sometimes has been, that the action of medicines, under such circumstances, is on the surface of the blood vessels, or through the connection which the blood has with the solids, the doctrine becomes deserted, and we are forced to recur to sympathy, as affording the only explanation.

By a recent writer of high authority, whose opinions, however, on this point, are not wholly without

the taint of the humoral pathology, it is conceded, as an incontrovertible fact, that a large proportion of medicines do act by the "medium of nervous communication."

"This," says he, "is manifest, from the effects of these substances being produced in a shorter time after they have been received into the stomach, than they could be, were they to act by being absorbed with the chyle into the circulating mass. The stimulus of wine or opium will instantly remove lassitude, and increase the vigour of the circulation, or of muscular exertion. Digitalis, given in sufficient quantity, very speedily reduces to a great degree the frequency of the pulse—or a large dose of cinchona, exhibited half an hour before the expected recurrence of the paroxysm of an intermittent, will prevent its attack."*

The same conclusion is deduced by Mr. Brodie, from his experiments in relation to poisonous substances, vegetable as well as mineral—and the few represented as acting otherwise, seem, really, from his own showing, not to do so.

In common with most others who have prosecuted similar inquiries, he has here probably been led into error by not adverting to the fact of the specific affinities of substances to certain parts, in which their effects may be displayed, by virtue of a sympathetic connection only.

The following are his conclusions :

1. "That corrosive sublimate kills by acting

* Murray's Mat. Med.

chemically on the mucous coat of the stomach. But arsenic, emetic tartar, and the muriate of barytes, by entering the blood.

2. "That alcohol, the essential oil of almonds, the juice of aconite, the empyreumatic oil of tobacco, and the woorara, operate through the nerves, without being absorbed into the circulation. But the woorara, applied to a wound, communicates its effects to the brain, by entering the circulation through the divided vessels."*

The latter may possibly be true. But surely we have the best proof that, when taken into the stomach, arsenic and tartar emetic, two of the three articles affirmed to operate through the circulation, produce their deleterious effects on that viscus. Their effects immediately and palpably commence there, and we find these as well as the substance itself, in it after death. What more is required to establish the point?

The principle for which I contend being clearly established in so large a number of instances, which, if necessary, might be still further increased, it appears to me, that it should be admitted as a universal law, unless exceptions to it be very clearly made out and demonstrated. To multiply causes superfluously is against one of the fundamental rules of philosophising, and is not less repugnant to the general course of nature, whose means are proverbially distinguished by great simplicity and uniformity.

* Transactions of the Royal Society for 1811 and 1812.

As regards the mercurial preparations, an example particularly selected by the writer whom I first cited, to illustrate the occasional admission of medicines into the circulation, we have the most conclusive proof that this never happens, whatever may be the manner in which they are employed.*

But against this Dover, the author of the powder which bears his name, has been brought forward to bear evidence to the absorption of mercury. It is many years since I have read his work, and not being able now to procure it, I must rely on general recollection in my reference to it.

Considering disease mainly to depend on obstruction, he gave crude mercury very largely, which he supposed, by permeating every part, would act as a deobstruent, and, in illustration of its pervading effects, gives the instance of a malefactor, who, having previously taken it freely for lues venerea, had, by the convulsions of death, under the gallows, the whole of it, amounting to a pint or more, shook out of his blood-vessels, and accumulated in large sacs, on each side of the rectum !!!

Not content with such absurdity, we are also told that it has actually been found in the cells of the bones, and Boerhaave is cited for the fact. It is stated by the same high authority, "*that he once saw with his own eyes, and hence could not be deceived, in the semen of a ram, the germs of the future animal, fol-*

* Experiments of Drs. Physick and Seybert. Med. Repository, vol. V.

lowing each other exactly like a flock of sheep entering a pen."

Without meaning to impeach the veracity of this truly pious and illustrious man, I cannot forbear to remark, that such statements strongly remind us of the uncertainty of human testimony, where the judgment permits itself to be perverted by the ardour of fancy, or an ambitious desire to establish preconceived notions.

Nothing seems to me more clear, than that the primary effect of this article is uniformly on the stomach, and that, however administered, that organ, either by direct impression or indirect sympathy, is put in a condition, of which the salivary glands and all other parts participate.*

Experiments, formerly referred to, and which have recently been confirmed in Europe, show that mercury does not pass into the circulation, and we are fully aware, that an impression on the stomach, from a variety of causes, as the sight of savoury or offensive food, or whatever excites nausea, directly or indirectly, as minute doses of emetic substances, or the irritation of the gravid uterus, increases the salivary discharge, &c. To this it may be added, that, without the stomach is susceptible to its action, no effect whatever is induced, and, to render it so, as well as to correct the inordinate effects of the article, we resort to remedies, the immediate operation of which is on the *primæ viæ*.

* Vid. Swan's Essay on the Action of Mercury, in which nearly similar views are entertained.

The martial preparations have also been very generally classed among the medicines presumed to operate by entering the circulation. Even conceding the fact of iron passing unchanged the digestive and assimilative processes, it would afford no sort of support to this ancient hypothesis. Being an ingredient in animal composition, it is reasonable to suppose, that it would, of course, be admitted into the blood vessels to a certain extent. Yet, probable as this appears, the contrary has been shown. Numerous and well-contrived experiments originally made by Dr. Edward Wright, and repeated by Dr. Hodge, a distinguished graduate of this university, under every circumstance of care and attention, demonstrate that none of the preparations of this metal can be detected even in the chyle. It is, however, contended, that under the use of chalybeates, the blood becomes more florid, and, as this quality is thought to depend in part on the iron it holds, it is deemed pretty strong presumptive evidence of the metal being absorbed. No doubt such an effect is produced, and so it is, by any medicine or course of life, which invigorates the system, and infuses the glow of health. The blood of every animal which has been examined, is found to possess iron, however various its food or habitudes—and as, in many instances, the metal could not possibly have been taken in, it is obvious, that it must be generated by the natural processes in the same manner as many other things are elaborated.*

* Amidst the contradiction and uncertainty which exist on this point,

Nitrate of silver is a third article which is alleged to enter the circulation, and for no other reason, than that under its use, the skin has occasionally assumed a livid hue. But other objections aside to the hypothesis, as the length of time of the occurrence, in two of the three instances recorded of its taking place,—several months after the omission of the medicine,—the death and desquamation of the skin which must result from the application of this caustic to it—to dye so extensive a surface, would require a thousand times more of the article, than was ever given to any individual. The fact is, and by which the reporters of these marvellous stories have probably been deceived, that in epilepsy the skin does sometimes assume, from the influence of the disease itself, a dark or leaden hue, of which several examples have occurred in this city.

To prosecute an examination of the grounds on which similar allegations rest, would lead me into the most unprofitable details. What is there, however preposterous, that evidence may not to be derived from the annals of our science to support,—verifying a favorite aphorism of one of the greatest of our teachers, “that for every false theory in medicine, there are a thousand false facts?” Let me only remark in conclu-

it would seem to be the best established opinion, at present, that iron in no one shape can be detected in the blood. By the calcination, however of this fluid, it is then developed, though in what precise state still remains doubtful. Experiments made by feeding animals on vegetables containing not a particle of iron, the blood of which, however, on calcination, displayed the usual portion of the metal, fully warrant the above hypothesis of the article being created.

sion, that it is shown by experiments made by myself many years ago, and since more than once repeated with greater precision, on a more extensive scale, by graduates of this school, that none of the preparations of iron, of copper, of lead, nor the colouring matter of indigo, of madder, or of rhubarb, can be traced even so far as the chyle.*

Being introduced into the small intestines of dogs, these several articles were observed to be rapidly taken up by the lacteals, the coloured ones losing their tints in passing on, and, in every instance, so completely were their properties obliterated, as not to be at all cognizable by any chemical test in the contents of the thoracic duct.

These results have lately been confirmed. In a work on absorption, by Professors Tiedemann and Gmelin,† I find it stated, that in no one of their experiments could they detect colouring substances in the chyle, either in the lacteals or thoracic duct. Nor did Majendie observe any such change in the chyle of dogs, to which he had given indigo, rhubarb, madder, and saffron.‡ The interesting inquiries of Drs. Lawrance, Coates, and Harlan lead to the same conclusions. Contrary to the experiments of Dr. Milnor,§ after feeding animals on prussian blue or indigo, and milk, in a large quantity, so much as nine ounces

* Hodge's Inaug. Dissertation, in which many of these experiments are contained.

† Published at Heidelberg; 1820.

‡ Elem. Physiol.

§ Phil. Med. Journal, vol. 4.

of the former article to a dog, in a short time, these they could not trace in any of the routes by which absorption is supposed to take place, nor in "a considerable number of the solids and fluids which were examined." "Cochineal, red saunders, anatto, turmeric, and prussian blue, thrown into the abdominal cavity of cats, were alike unobservable in any route."* Numerous experiments of the same kind were made by Hallé, and with no better success.†

Nor are odorous substances admitted into the chyle. Dumas, Majendie, and Flandrin, gave to animals camphor, alcohol, asafœtida, &c. without being able to perceive it in the contents of the lacteals, or the thoracic duct—and Gmelin and Tiedemann were equally unsuccessful in their experiments.

These results are in direct contradiction to the statements of some preceding writers. Martin Lister and Musgrave said, that in their experiments on dogs, they found, after giving indigo, the chyle of the thoracic duct and of the lacteals coloured blue. Baller, Gould, and Foelix, pretend to have seen the same thing. Even in Mr. Hunter's experiments, coloured substances are said to have passed from the intestinal canal into the lacteals. Haller and Blumenbach, who repeated Lister's and Musgrave's experiments with indigo, affirm, they obtained the same results. Viridet and Mattei are of opinion that the chyle

* Phil. Med. Journal, vol. 4.

† Fourcroy, Systeme de Connais. Chem. tome x. p. 66.

of the thoracic duct was coloured yellow, after they had fed animals on the yolk of eggs—and red, after feeding them on beet root.

In commenting on the above statements, Tiedemann and Gmelin strongly express doubts of their accuracy, and fear that the experiments of these old physicians were incautiously performed, and that they suffered themselves to be deceived.*

It is satisfactory to have it in my power to point out the source of errors which might impeach the veracity of respectable authorities. Concerning the experiments of Mr. Hunter, in which he reports having seen the chyle coloured blue, it is remarked by Drs. Lawrance, Coates, and Harlan, that they were also at one time under a similar impression from an optical illusion. What they saw was the faint blue, which transparent substances assume when placed over dark cavities.†

Of other experiments of Drs. Lawrance, Coates, and Harlan, so much relied on by my opponents, it is scarcely possible, from their copiousness, within the narrow compass to which I am restricted, to present even a summary. To the work‡ which contains them I must therefore refer such of my readers as are interested in the enquiry. Though imposing in the first aspect, the evidence which they afford against me amounts to very little, and much may be collected

* Edinburg Med. and Surg. Journal.

† Phil. Journal, vol. 3, p. 277.

‡ Philadelphia Journal, &c.

from them directly to support my views. Of the various articles employed, it appears that only two, the sulphate of iron and the prussiate of potash, were cognizable in the blood or other parts. Conceding the accuracy of these, which I do without hesitation, I must still insist, waiving all other objections, that conclusions derived from experiments in which the animal is subjected to the most excruciating torture, as was the case here, can never be brought forward to illustrate a healthy process. In such a state of agony, the natural order of things is disturbed, functions are deranged, and events happen, wholly unknown to the sound condition of the animal economy. What can prove this more conclusively than their own experiments, in which the prussiate of potash was transferred from the abdominal cavity to the upper part of the thoracic duct, in a period varying from two to five minutes. Does this rapidity of absorption happen in a natural state of things? It is quite plain, on the contrary, that, under circumstances of such violence to the system, the absorbents have articles forced into them, which are hurried on without being acted upon, as takes place in certain diseased or irritated states of the stomach and bowels with regard to their contents, which, escaping entirely the processes of digestion and assimilation, pass out little or not at all changed,

Nothing shows more the poverty of the cause of my opponents, than the vast importance given to the above experiments. Not Archimedes himself exulted more

on his memorable discovery, than they when the prussiate of potash revealed its bluish tints!

Yet, it is not to be concealed, that some very respectable writers have affirmed, that, under other circumstances, certain matters do enter the circulation, and may be detected by chemical tests. Of the facts of this kind, not the least relied on, is one which comes recently from Mr. Brande, that the blood of a patient who had taken soda, long and largely, was found to contain that alkali in excess.

Granting it to be true, is not the force of the fact done away by the recollection, that soda is a constituent of blood, and, as such, may freely enter into its composition without detriment? The experiments, however, on this subject, have been made without adverting to a source of fallacy, which greatly impeaches their validity. On blood, dead and separated into its parts, the whole have been performed, and obviously, in this state, the elements of things may again recombine, in the manner already noticed, which in the living state were broken up, and assimilated by the powers of animalization.

Could more proof be required of the operation of medicines being independent of the circulation, it might be found in the well-ascertained fact, that many of them produce their full effects, though the heart and blood vessels be previously removed. Long ago it was shown by Whytt, that if the heart of a frog be taken out, and a solution of opium injected into the abdomen, the animal speedily becomes convulsed.

The poison of the viper, according to Girtanner, applied to a frog prepared in the same way, will destroy it as soon as if no mutilation of the animal had taken place. Many experiments of a similar import, with other active substances, have been instituted, the results of which are so exactly correspondent, that to detail them would be superfluous. The converse has been equally proved, or that no extension of the impression of medicines happens in cases where the brain and spinal marrow have been destroyed, though the heart and vascular system be preserved uninjured.*

In concluding this part of my enquiry, I have only further to remark, that it is not a little extraordinary, and surely betrays the utmost distrust of its verity, that a practical application has never been made of the opposite doctrine. Even the most zealous of its disciples do not venture to introduce medicines directly into the blood. In vain they have been challenged to subject their notions to this decisive test,—and, while representing the blood vessels as mere common sewers to the system, have shrunk from the proposal of having a few drops of the blandest fluid thrown into the circulation. Where is the difference of an active substance passing by the thoracic duct, and the injection of it, in the same quantity, and of the same temperature, at once into the vessels?

It results, on the whole, from what I have said, that

*Murray's *Materia Medica*.

we are to reject the fluids altogether in our inquiries relative to the operations of medicines—because, in addition to the reasons already stated for doing so, we have in that law of the animal economy termed sympathy, or consent of parts, a solution of the problem, which comports infinitely better with the existing state of our knowledge.

Conformably to the theory I have adopted, whenever a medicinal substance is applied to a susceptible portion of the body externally or internally, an action is excited, which is extended more or less, according to the diffusibility of the properties of the substance, or the degree of sympathetic connexion, which the part may maintain with the body generally. Thus a set of actions is raised, every one of which is precisely similar, provided they are confined to the same system, by which is to be understood parts of an identity of structure. The chain, however, running into other systems, it loses its homogeneous character, the actions being modified by the peculiar organization of the parts in which they may take place. These are principles of universal application. In every case, whether it respects the operation of remedies, or the production of disease, the spot primarily acted upon is a point, from which is diffused the radiated impressions. This is a mode of action peculiar to living matter, and is remarkably distinguished from all other processes. An impression is made and extended without mixture or combination, or in any degree disturbing the order and constitution of the

part in which it takes place. But in chemical operations, to which we must look for an explanation, in the event of rejecting the above rationale, decomposition inevitably occurs—and, as the result, new compounds formed from a union of the elements of the part, with the substance applied, wholly subversive of the existing structure. By a course of medicine, and, indeed, by every meal, our nature would become essentially changed. Were things as freely admitted into the circulation as it is represented, the blood must, I repeat, lose its homogeneity, and an animal, at times, by the variations of diet, lose even its corporeal identity. Exceedingly preposterous as it may seem, such is the direct and legitimate corollary, from any other than the sympathetic view of the *modus operandi* of agents on the animated frame.

Let it not, however, be supposed, that the blood is to be regarded as a dead fluid, without any immediate dependencies or connection with the rest of the system. Every argument, on the contrary, adduced in favour of the animation of any section of the solids, strikes me as being equally applicable to the circulating fluids.

To the writings of Mr. Hunter, referring for a full developement of the evidence to this effect, I shall, now, only state, that such a property in blood is essentially necessary to the preservation of life. Between *living* and *dead* matter there is an eternal hostility, which under all circumstances, proves repugnant, and utterly irreconcilable. The moment a

part dies, an effort is made by the conservative powers of the constitution, to throw it off, as we see in the processes of sloughing and exfoliation: where it is not successful, morbid irritations commence, in illustration of which we have many well known facts, and particularly the case of hectic fever. Even the secreted fluids cannot remain long in their proper receptacles without doing mischief, as is perceived in retention of urine, though the bladder be not painfully distended—as well as in similar cases.

The same effects precisely would take place, were the blood destitute of vitality: instead of the source of action and life, it must become a morbid irritant, productive of inflammation, or, what is more probable, of immediate death. These views derive no inconsiderable support from what happens in the transfusion of blood. Experiments originally made by Dr. Physick, and repeated by Dr. Blundell, of London, demonstrate, that, prior to the coagulation of blood, or, in other words, till it dies, which takes place, for the most part, in about thirty minutes from the time it is drawn, it produces no bad effects. But after this, being injected, it destroys life as speedily as any dead or extraneous fluid whatever.

The animal machine is constituted of solids and fluids, by the latter of which, I mean, now, only the blood. It is a whole made up of parts, which, though somewhat dissimilar, and existing in different proportions, are no less endowed with the vital influence, and held together, and made to harmonize, by com-

mon susceptibilities and sympathies. Connected indissolubly by these ties, an impression made on any one portion of the system, whether solid or fluid, is equally felt by both, on account of this established consent of parts.

Do we not find the blood variously affected in diseases, so much so, indeed, as really to form not the least unerring criterion of the nature of the case? Be this admitted, can we require any further proof of the correctness of the preceding views? It is, indeed, impossible to conceive how the blood can undergo such changes, from impressions on the solids, were they not united by sympathy, an exclusive attribute of the living state. No one has pretended to show, that they are of a chemical nature, or analogous to the changes which take place after death—and, I think I have rendered it pretty certain, that they cannot be ascribed to the introduction of any foreign matter into the circulation. It remains for me, on this point, only to observe, in further illustration of my general principle, that so close is the consent between the blood and solids, and so completely reciprocal their dependence, that from impressions made on the former, as, among many other instances, by a particle of the virus of the viper, death instantly ensues, and the whole animal fabric, solids and fluids, presents the spectacle of a broken texture, and great disorganization.

There would seem, at first, to be here some inconsistency with what I have previously stated on this

part of my subject. But, I think, a little care in the comparison of the passages, will relieve me from this imputation, without the trouble of any explanation.

Entertaining such opinions, it may, perhaps, be demanded, why I reject the circulation, as a medium of the operation of remedies, and as a primary seat of disease? My answer to this inquiry might be collected, with no great difficulty, from the strain and scope of much of the preceding reasoning. It will be recollected, that I have strenuously endeavoured to prove, that no article, whether remedial or morbid in its tendencies, enters the blood with a retention, in any degree, of its original or active qualities, and hence, that the fluids can only be secondarily affected, through the mediation, and by virtue of, the sympathies which they maintain with the solids.

As the doctrine here advanced is intimately connected with the principle of sympathy, it may be proper that I should say a few words on this subject. There are, indeed, not wanting some who have affected scepticism as to its very existence. It must be confessed, we have no very distinct intelligence relative to its nature. But are we on this account to question its existence? Equally might we doubt the sensibility or irritability of the body, since neither of these qualities of vital matter has been at all demonstrated. Notwithstanding this, we are persuaded of their existence from the phenomena which they exhibit—and it is by the same description of

evidence, that we are, or ought to be, assured of the existence of sympathy.

“Causa latet: vis est notissima.”

In employing this term, therefore, I mean only to denote, like chemical affinity, caloric, and many other such expressions, a principle, or power, of which we know nothing except from the experience of its effects, the precise essence or nature being occult and concealed. Thus, in the same way, says Newton, “What I call *attraction* may be performed by *impulse*, or by some other means unknown to me. I use the word here to signify only in general, any force by which bodies tend towards one another, whatever be the *cause*.”

Of the manner in which impressions are extended, as well as of the cause of the more intimate consent of certain parts, we are not, perhaps, accurately informed. It would seem, however, that in neither case is it to be exclusively referred to the nerves, as is commonly supposed. Those sympathies which prevail among the various viscera of the abdomen, and between them and the head, neck, and contents of the thorax, may be explained with sufficient probability, by the extensive anastomoses of the intercostals with almost all the nerves which proceed from the spinal marrow. But there are many other sympathies, not less conspicuous, between parts, the nerves of which have not the slightest connexion. To get over this diffi-

culty, it is alleged by some, that, inasmuch as the brain is the centre of the nervous system, there must be through it an intercommunication of all the nerves of the body. An impression made on a sentient extremity, according to this hypothesis, is conveyed to the *sensorium commune*, by which it is re-transmitted to the original part producing sensation and motion. It sometimes, happens, however, that, instead of the sensation being experienced at the point impressed, it is felt somewhere else, and may be even at a considerable distance. Thus an irritation in the bladder from a calculus is often felt at the glans penis—a blow on the elbow at the extremities of the fingers—the pain in morbus coxarius, at the knee, and in inflamed liver, at the shoulder. These, denominated illusive sympathies, are supposed to be owing to an error which the *sensorium* commits in the direction of the reflected impression.

All this is very plausible, and may explain some of the sympathies. Yet it appears, that, either by the co-operation of different organs in the performance of a function, as in the complex apparatus subservient to respiration, or from similarity of structure, parts, though detached, being prone to be affected by the same cause, as the parotid gland and testes in the male, and the same gland with the mammæ in the female, the habit of acting in unison is acquired and confirmed. This habit of concerted action is termed association, and has been adopted as a principle by Locke, by Hartley, and by Darwin, to account for the

connexion in many of the motions of the body, as well as in the operations of the mind. Both the sound and morbid states of the system present numerous instances of these associated actions, some of which are constant and uniform, while others are occasional and anomalous, produced, as it were, accidentally.

The principle of sympathy pervades the body, every portion of it being susceptible of associative actions, by which means the several parts are linked together so as to constitute one whole, or unity of system. It is to this principle, whatever it be, which uniting all the organs of the animal economy, that we are to impute the wonderful concurrence and perfect harmony observable in its complicated actions during health. But, though this general medium exists, to the reception and propagation of impressions, there are three surfaces on which remedies, and perhaps the causes of disease, more particularly operate. These are,

1. The alimentary canal.
2. The skin.
3. The organ of smell.

Each of these parts has a considerable susceptibility, and maintains a very extensive connexion with the system generally, though the stomach is possessed of infinitely the quickest sensibility to action, and the most intimate and multiplied relations. No viscus or organ, not even the brain itself, can be compared to it, in this respect, or which occupies so important a station in the animal economy.

Destitute of a stomach, no animal can exist. Life may be sustained, even in the perfect animals, independently of almost every other organ. Examples are numerous of fœtuses being born of a full size without a brain, spinal marrow, heart, lungs, liver, or uterus. No instance, however, has been met with, in the course of very extensive researches on this subject, where the stomach was wanting. As the most indispensable of the vital organs, it seems, indeed, to be an inseparable incident to every variety and gradation of animal existence. No matter how inferior the being may be, it is always provided with some apparatus equivalent to a stomach.

Conveniently situated for the purpose, the stomach is probably the throne of the vital principle, from which would seem to emanate an influence, that, diffused over the system, preserves, as I have already mentioned, the order of the parts, and sustains the vigour, tone, and well-being of the animal economy.

“Languido ventriculo, omnia languent.”

Assailed, however, by impressions which it cannot resist, this organ, as the centre of association, becomes the seat of the first link in the chain of most diseases, and is always the chief medium of the operation of remedies, in the correction of morbid derangements.

As a continuation, pretty much of the same structure as the stomach, the intestines afford also a me-

dium by which medicines may be introduced, and sometimes with great advantage. There is, indeed, scarcely one article of the *materia medica* which cannot be so managed, as to produce its full effect when thus employed. To attain this, however, the dose should be largely increased, and, as a general rule, about three times the quantity is demanded. It is, perhaps, not sufficiently known, that after the stomach, by long use, has lost, or greatly impaired, its susceptibility to the action of a medicine, that it operates with fresh and unabated force when applied to the rectum.

That remedies act on the surface of the body, has been known from the earliest times—and the practice founded upon it, is, probably, to be ranked among the first attempts that were made, in the infancy of our science, toward the removal of disease. The whole of the cutaneous surface is endowed with sensibility to impression, though the soles of the feet are possessed of it in the largest degree, and, hence, have been considered by a distinguished teacher of physic, as among the most common avenues to the invasion of disease, or for the reception of remedial impressions. But, though the practice has been so long and generally pursued, it was never doubted till lately, that, when applied to the skin, medicines operate in any other way than by entering the circulation. Even the rubefacient and vesicating applications were, at one time, not excepted : the effects of these being ascribed altogether to the absorption of the acrid particles of

the substance used for these purposes, into the blood, and thereby raising general excitement.

Nearly about the same period, M. Seguin, in France, and Dr. Rousseau, of this city, called in question the existence of cuticular absorption. But the praise of laborious and successful investigation, is due exclusively to the latter experimentalist. As early as the year 1800, he attempted to prove, and at least rendered it highly probable, that the *pulmonary organs*, and not the *skin*, constitute the inlet through which certain substances enter the system.

By cutting off all communication with the lungs, which he easily effected by breathing through a tube, protruded into the external atmosphere, he found, that though the surface of the body were bathed with the juice of garlic, or the spirit of turpentine, none of the qualities of these fluids could be detected, either in the urine or the serum of the blood.

Conducted nearly on the same principle, but with a greater diversity of substances, experiments exceedingly well devised, and neatly executed, have since been made by persons of opposite prepossessions, to an almost incredible extent. Contradictory as many of these are, a candid examination of the whole, will still lead to a satisfactory conviction, that absorption from the surface of the human body, does not exist as a natural and ordinary function.

Borne down with the weight of evidence against them, most of the advocates of the ancient hypothesis were, indeed, prepared to abandon it, as no longer

tenable, when, about ten or twelve years ago, an experiment made by Dr. Mussey, again revived their faith in cuticular absorption. He very clearly proved, that, if the body be immersed in a decoction of madder, the colouring matter of this substance will be taken in, and may be displayed in the urine by using any one of the alkalies, as a test.

Determined, if possible, to put this agitated question to rest, Dr. Rousseau, assisted by his friend, Dr. Samuel B. Smith, has subsequently performed a series of experiments, many of which I witnessed, and can therefore bear testimony to their accuracy, with every variety of substances, mild and acrid, volatile and fixed, nutritive, medicinal, and poisonous.

The result of these extensive researches, is :

1. That of all the substances employed, madder and rhubarb are those only which affect the urine—the latter of the two, the more readily enters the system. Neither of these articles can be traced in any other of the secretions or excretions, or in the serum of the blood.
2. That the power of absorption is limited to a very small portion of the surface of the body. The only parts, indeed, which seem to possess it, are the spaces between the middle of the thigh and hip, and between the middle of the arm and shoulder.

Topical bathing, with a decoction of rhubarb or madder, and poultices of these substances applied to the back, or abdomen, or sides, or shoulders, produced no change in the urine: equally ineffectual

was immersion of the feet and hands in a bath of the same materials, which, after being kept in it for several hours, not the slightest proof of absorption was afforded.

Such is the state in which this interesting subject is at present left. Though, perhaps, not absolutely decided, enough, surely, has been done, to demonstrate, that cuticular absorption rarely happens, and that, whenever it does, it cannot be deemed the effort of a natural function.

Covered, as is the whole surface of the body, by the impervious cuticle, it is manifest, that absorption can only take place in one of two ways: either by forcing the substance under the scales of the epidermis, as in the instance of the application of frictions, or by continued bathings or fomentations—the cuticle becoming so changed in its organization, as to admit of transudation, or the insinuation of the fluid under its squamous structure, so as to come in contact with the mouths of the lymphatics situated within.*

At all events, whatever difference of opinion may be entertained as to the degree of conclusiveness of the experiments to which I have alluded, it cannot be necessary to resort to cuticular absorption, to explain the effects of substances applied to the surface of the body. We shall do this much more satisfactorily, by referring it to sympathy, or to another source which I am presently to point out.

* I find that this explanation has been adopted by M. Majendie:

That the skin has a very intimate sympathetic connexion with the body generally, and more especially with the stomach, is a fact so notorious, that it would be a waste of time to attempt to prove it. It is through this medium, that most substances, applied to the surface, certainly operate.

The supposed existence of pulmonary absorption, would seem, I confess, on the first view, to militate in some degree against this opinion, and to render it probable, that volatile matters, at least, are inhaled and act through the lungs. Experiments, however, have recently been made,* which go far to invalidate this hypothesis, and show, that, under such circumstances, the olfactory nerves are the seat of the impression, and the medium through which these volatile matters produce their effects. These experiments would occupy too much space to be separately detailed. Collectively, they warrant the conclusion, that, by simply closing the nostrils, either by compression with the fingers or by filling them up with putty, the fumes of ardent spirits, of a strong decoction of tobacco, or of an infusion of opium, may be inhaled for one hour, without any unpleasant effects: whereas, if the precaution mentioned be omitted, the consequences prove most distressing.

New as these results are, and inconsistent with our pre-existing notions as they may be, they are rendered highly probable, independently of the respectability

* By Dr. Rousseau.

of the source whence they proceed, by some facts of a very striking and indisputable nature. Every practitioner has witnessed, how powerfully all the volatile and odorous matters operate on the olfactory nerves in health and in sickness : and it is hardly less known that when the sense of smell is impaired by a coryza, or entirely suspended by obstructing the nostrils, that the sensible qualities of most substances are so lost, that they cannot be accurately discriminated—and this extends, even to those articles of our food or drink, with which we are most familiar. The preceding facts are sufficient, at least, to awaken curiosity on this subject, and to urge to more exact inquiries, by which the truth may be elicited and confirmed.

I have now completed what I mean, at present, to say on the *modus operandi* of medicines generally. The subject has not occupied as much of my attention, as, perhaps, its importance demands. But, I shall again incidentally revert to it, and, in treating of the particular classes of remedies, an opportunity will also be afforded, of giving to it a further and more precise consideration.

SECTION II.

The Classification of the Materia Medica.

THE materia medica has sometimes been divided into *nutriments* and *medicines*. This arrangement, which strikes me as incongruous, I shall not adopt. The plan hitherto pursued, in the investigation of the articles of food, seems idle in itself, and has certainly led to no practical utility. Who need now to be told, at least in this abundant country, of the solid qualities of beef and mutton—of the delicacy of poultry, or of the flavour of game—that there are some vegetables flatulent, and some otherwise—that ardent spirits, or wine, when drunk to excess, will intoxicate, and ultimately produce disease—and that, on the whole, the use of water is more natural,—preserves sobriety, and conduces to health?

Daily experience teaches us, on these points, what to select and to avoid, with infinitely greater certainty than any system of abstract instruction which

can be devised.* The disquisitions which I have met with of this sort, especially such as go gravely into an enquiry to determine the nutritive principle of substances, whether it be mucilage, sugar, or oil, or the whole or any of these, are, indeed, among the specimens of the most arrant pedantry and empty flummery, that, in my opinion, have ever been imposed on the credulity, or insulted the common sense, of mankind.

Let it not, however, be supposed, that I wish to disparage the utility of diet, or to deprecate any further inquiries into the subject. Directly the reverse is the case. To a properly regulated regimen, as a means of preventing and curing diseases, or to secure a speedy and uninterrupted convalescence, it is impossible for any one to attach greater importance than myself, or more ardently to desiderate a work, which, coming from the hands of a practitioner of enlarged experience, and sound judgment, shall exhibit the most minute and detailed instructions, for the adaptation and even cookery of food, and preparation of drinks, in such cases.

As respects the classification of medicines, much difficulty has always been confessed. It is not my intention to notice, in detail, the multiplied systems extant. The history of these may be found in most

* "The common experience of mankind will sufficiently acquaint any one with the sorts of food which are wholesome to the generality of men, and his own experience will teach him, which of these agree best with his particular constitution." *Heberden.*

of the treatises on the *materia medica*. I shall now merely remark, that every attempt which has been made to arrange medicinal substances according to their sensible qualities, their chemical compositions, or their botanical affinities, has failed. The principle on which they are all founded, unavoidably associates articles, which, as remedies, have no resemblance, and separates others, that are intimately allied by such relations.

The object, in the cultivation of the *materia medica*, being to acquire a knowledge of the remedial virtues of substances, it is obvious, that the best arrangement is that, which places them as nearly as possible as they correspond in their effects on the living system. Yet, even this is not without its perplexities and disadvantages, the chief of which are owing to our imperfect acquaintance with the laws of the animal economy, and the mode of operation of agents. It is not easy, on this account, to appreciate their effects with accuracy, and especially in a state of disease.

Many medicines are possessed of diversified powers, and hence require to be considered in different views. The same article may be emetic, cathartic, diaphoretic, expectorant, diuretic—and, therefore, in order to its complete history, must be introduced into each of these classes, and its effects detailed. This is exceedingly inconvenient, as it exposes us to constant repetitions, and renders our descriptions necessarily broken and detached. Yet, with all these

defects, this mode of arrangement is, perhaps, superior to every other, and will be adopted by me.

Cullen, who of late has been much followed by the teachers of the *materia medica*, has a general division of medicines as they operate on the *solids* or *fluids*.

The first class, according to him, act either on the simple or vital solid.

Those which operate on the simple solid, are astringents, tonics, emollients, and erodents: and on the vital solid, stimulants and sedatives, including narcotics, refrigerants, and antispasmodics.

Medicines, operating on the fluids, are such as either produce a change in them, or occasion some evacuation. The former comprise attenuants and inspissants. When they correct general acrimony, they are called demulcents: when partial acrimony, antacids, antalkalies, and antiseptics.

The latter, as evacuants, are errhines, sialagogues, expectorants, emetics, cathartics, diuretics, diaphoretics, and emmenagogues.

In this respect, however, he has manifestly departed from his own system of pathology—since he strenuously maintains, that the fluids are never primarily affected. I shall not pause here, to point out the many other objections which might be alleged against this celebrated classification. They are too obvious to escape observation, after what I have said on a preceding occasion, relative to the *modus operandi* of medicines, and, therefore, demand no particular criticism.

My deliberate conviction is, that they all act by virtue of that law of the animal economy, termed sympathy,—and that, whatever changes may be wrought in the fluids, are to be referred to impressions through the mediation of the solids. Yet, while maintaining, so far, the uniformity of the operation of medicines, I again repeat, that I am not among those, who, in the eagerness of generalization, have insisted, that all are endowed with the same properties, differing only in degree of force, permanency, and diffusibility. My view is so opposite, that I believe scarcely any two agents produce precisely the same effects, and hence the infinitely diversified shades of disease, and the necessity for a variety of remedies in the management of them.

Every organ of the animal economy, we know, is excited to the performance of its office, only by its natural and appropriate stimulus, as the eye by light, the ear by sound, the testicles by venereal desire, &c. Medicines, too, have their actions exceedingly modified by the peculiarities of structure on which they operate. What is remedial or innocuous when applied to one part, may be poisonous to another. Emetic tartar, in the stomach, pukes—in the rectum, purges—on the skin, erodes, or vesicates—and, in a state of solution, proves a mild lotion to the eye.* Carbonic acid, cordial to the stomach, inhaled by the lungs, suddenly destroys life.

* Dr. Rousseau.

The difference in the mode of action, of articles of the same class, is not less conspicuous. Mercury, and opium, and wine, and volatile alkali, and camphor, are all stimulants. They so far, therefore, agree in their general properties, though, in the nature of their operation, they are extremely discrepant, and cannot, by any variation of dose, or manner of administration, be assimilated. This holds equally true with respect to all the important articles of the *materia medica*. An attentive observation of the phenomena, proves, that the action of each is modified by its own peculiar qualities, or the tissue to which it is applied, and that the effects produced are, to a certain extent, *sui generis*.

Further proof of the soundness of the position, may be had in the acknowledged fact, that, when susceptibility to a certain agent is expended, some other will produce its full impression. Every practitioner is so fully aware of this law, that there is hardly a case of disease of any duration, in which it is not kept steadily in view, and the course of treatment influenced accordingly. Daily will he change, or essentially vary the stimuli, in the emergencies of the advanced stages of low and protracted fevers, and derive from the practice important results. Commencing, perhaps with carbonate of ammonia, in succession, as susceptibility becomes wasted, he prescribes camphor, bark, opium, musk, wine, ardent spirits, turpentine—till, finally he runs through the entire class. Exactly in the same way, in the management of

chronic affections, is the whole series of tonics exhausted. When bark or steel ceases to produce an effect, some other of the vegetable bitters, or mineral substances, may be substituted with advantage. Nor does it always happen, that the successful article is the most powerful, or, as a general rule, less fallible. Wine whey will often revive the excitement of a system sinking under the use of strong brandy toddy—and castor oil, magnesia, or the neutral salts, open obstructed bowels, which had resisted calomel, jalap, gamboge, separate or combined.

Examples, not less pertinent, might be derived from every class of the *materia medica*. Narcotics, in particular, furnish some very striking illustrations. Who has not seen henbane, or the hop, or the liquor of Hoffman, quiet irritation, and compose to sleep, when opium had failed? and even laudanum, paregoric, or some other preparation of this article, to succeed, when, in substance, it was impotent or mischievous?

But another distinction is to be attended to, in the history of medicines. There are some, which have a wide pervading operation over the system, and others a local, being limited to a single organ or part. Of the first class, or general stimulants, we have a considerable section, marked by great diffusibility, which, as soon as exhibited, occasion a universal excitement. There is a second section, by which vigour and tone are imparted to the body, attained, however, slowly, and only by a long-continued administration.

The former are transient in their effects, while such as operate gradually, produce more permanent impressions.

The local stimulants act either immediately on the stomach, or are directed by a species of affinity to some distant part. The relations between medicinal substances, and certain portions of our organic structure, are exceedingly curious, and, in a practical view, deserve the most serious reflection. In advancing this opinion, I am aware that the possibility of any medicine acting specifically on one part, without exerting the same sort of action on other parts, has been denied, and on the ground of the intimate connection, which can be traced throughout the whole animal structure. It must be conceded, that a superficial view of our organization, and the uniform order of its various actions in a sound state, render such an objection very plausible. But a more minute examination, independently of a series of well-conducted experiments, performed in this University, establishes directly the reverse.

The experiments to which I allude, are contained in the inaugural thesis of the late Dr. Bibb, published in 1801. He enters pretty fully into the subject, and most satisfactorily establishes the point, as regards a large proportion of the ordinary articles of the *materia medica*. The same inference, I think, may be deduced from the more recent inquiries of Orfila and Brodie, concerning the mode of action of poisonous substances. Each set of these experiments warrants

the conclusion, that most matters operating on the living system, are directed to some one part, in preference to others, on which their force is mainly expended.

The fact is, that while the several systems, or subordinate sections of the body, are so linked together as to constitute one whole—such is still the independence of each, and the difference in the operation of the same article, that certain applications made to an individual part, may be productive of, as before stated, the most fatal consequences, which, to some other, would be attended with mild, and even salutary effects.

In the ordinary divisions of the *materia medica*, we have indeed, as formerly intimated, an ample recognition of the doctrine, as well as of its convenience in relation to practice. The very titles selected to designate the several classes of medicines, are expressive of the same views. Do we not mean, in using the terms emetic, cathartic, diaphoretic, expectorant, diuretic, emmenagogue, to convey, as distinctly as language will enable us, the idea of articles operating specifically on certain structures—and, by stimulants and tonics, some of a wider influence, embracing, perhaps, the whole system?

It might be collected from the preceding remarks, though such is not my design, that I regard all medicines as stimulants. Being material in every inquiry, that we should have a clear understanding of the terms to be employed, I shall, at this early

stage, define what I mean by stimulants and sedatives. The discussion, so long maintained on this point, has been deemed little else than a dispute about words. As, whatever produces any positive impression on the living system, does it usually by an incitant power, there can be no doubt, that most medicines are stimulant. But the effect created may be inferior to the natural degree of excitement, and much less than that of disease. Thus the neutral salts, and especially nitre, irritate and stimulate most manifestly, though so feebly, in the usual dose, that their effects are confessedly debilitating. When this happens, as lessening action, the article may, with propriety, be denominated; and in a practical view considered, sedative, in contradistinction to our more energetic remedies. Yet, as serving to convey the erroneous notion of a state of *plus* and *minus* only, without any designation of the *peculiarity of action*, it were well, perhaps, to exclude altogether these terms.

It will, also, hereafter be shown, when we come to the consideration of narcotics, that it is not improbable, that some of these articles have a direct tendency to lessen action, by repression of the cerebral and nervous energy, and hence, in the Cullenian sense of the term, should be viewed as sedatives. Nor have we less grounds to suspect, that there is another set of agents, which operate neither by the elevation nor depression of action.

Nothing is more delusive than the doctrine of the unity of disease, lately so dominant among us, and,

as I have just shown, of the identity of medicinal impressions. Disease may be cured by the reduction of excitement by evacuations, or by a direct sedative impression without depletion, or by counteraction, or by subverting the morbid movement going on at the time, by an imperceptible alterative agency, or by high stimulation, according as a sthenic or asthenic diathesis may predominate. Yet, in all instances, our remedial agents operate, so to disturb or enfeeble disease, as to enable the vital energies, by whatsoever title they may be designated, to overcome it, and restore the order of health. To attain this purpose, we are possessed of means in the diversified collection of the *materia medica*, and, to facilitate their appropriate application, an assortment, agreeably to such analogies, is desirable.

The views which I have presented, of the qualities and *modus operandi* of substances, would lead to a very simple classification. I might, indeed, comprise the whole of the articles of the *materia medica* under a few general heads, or leading departments. But as such generalizations are deficient in perspicuity and practical convenience, I shall, to secure these ends, as well as to avoid any change in that nomenclature, now so universally received, adhere pretty closely to the ordinary plan, in each respect.

SECTION III.

Emetica, or Emetics.

EMETICS may be defined medicines which excite vomiting, independently of any effect arising from the mere quantity of matter introduced into the stomach.* The use of these remedies is so extensive, and their effects often so salutary, that I shall be justified in treating of them at some length.

Emetics were employed in the earliest times. To evacuate the stomach, for remedial purposes, seems, indeed, to be an instinctive impulse. It is a practice pursued by the most savage tribes, and even by the brute creation. Nothing, therefore, can be more absurd, than the objection to their use, as an unnatural remedy. We have no class of medicines more generally resorted to, and few of which there is a greater profusion.

In the process of vomiting, the vermicular motion of the stomach becomes inverted, the diaphragm and

* Murray's Mat. Med.

abdominal muscles are called into action by association—and the pylorus being contracted, the contents are forcibly ejected. But how this retrograde action takes place, is not very intelligible. Emetics are undoubtedly local stimulants, though the effect is not always proportioned to the degree of power which the article may possess. It is however maintained by Darwin, with some plausibility, that vomiting is not the consequence of increased, but of diminished action, proceeding from the disagreeable sensation of nausea and sickness. This state being induced, he presumes that the natural motion of the stomach is gradually lessened till ultimately it ceases, and a new and inverted action takes place. The supposition of vomiting having its origin in debility of the stomach, certainly derives some confirmation from the circumstance of its being frequently excited by extreme languor, or syncope, whether induced suddenly, or brought on by protracted disease. Whatever, in fact, relaxes the system, generally disposes to vomiting. Yet, on the other hand, some of our medicines, actively stimulant, are also emetics. It is not easy to reconcile such a contradiction—and the only way, perhaps, in which it can be done, is, by supposing, that, while the article acts locally as a stimulant, it produces, indirectly, general debilitating effects. By thus concentrating excitement in the stomach, their utility in relieving many diseases, remotely situated, can at least be most satisfactorily explained.

It has been doubted, by some physiologists, whether

the stomach be not entirely passive in the effort of puking. They allege, that in this operation, the diaphragm and certain auxiliary powers are alone concerned. But the experiments of Haighton are so conclusive, as scarcely, in my opinion, to leave this any longer a matter of controversy. During the effort of vomiting, he opened several animals, and distinctly saw the contractions of the stomach, and, of course, its direct agency in the process. Yet it appears, from recent inquiries, that this is still a moot point in physiology. Experiments made by M. Majendie, and repeated in the presence of a committee of medical men, appointed for the purpose of testing their accuracy, are entirely contradictory of those mentioned, showing the stomach to be quiescent in the act of vomiting. But, in going over the same ground, M. Manigault conducts us to an opposite result, in which he is supported by Professor Portal, and M. Bourdon, both of whom appeal to experiment, and to some pathological facts, which are very imposing. Chirac long ago entertained an opinion similar to that of Majendie. In speculating on this subject we must be guided only by the obvious phenomena of the process, and these will lead us to conclude, that the primary impression on the stomach is transmitted to the sensorium commune, which invokes the diaphragm and abdominal muscles to co-operate in the production of emesis. There are instances, however, where the brain seems to be originally affected, as in that of concussion or by narcotics,

—in the motion of sailing, whirling, swinging,—or by the influence of particular odours, tastes, or the sight of disgusting objects, or by certain associations. That vomiting materially depends on cerebral agency is further illustrated by the well known fact, that in congested and other states of the brain, interrupting the transmission of its influence, the process does not take place, or is induced with difficulty. Why the articles denominated emetics have the peculiar quality of thus affecting the stomach and its associate organs, is as unintelligible, as that a sternutatory should excite sneezing, or indeed the specific properties and actions of any of the substances of the *materia medica*. These must all be received as ultimate facts, about which it is vain to conjecture in the present state of our knowledge.

Connected with the operation of this class of articles, there is a peculiarity not unworthy of remark. Most other medicines lose their power by repetition, which, indeed, would seem to be one of the laws of habit. Exactly, however, as emetics are repeated, so does the stomach increase in susceptibility to their impression—so much so, that, after frequent use, the mere sight of the medicine, or even conversation relative to it, may excite vomiting. Yet, like other articles, they operate with various degrees of facility on different persons, and at different times on the same person, which is, in part, to be imputed to original peculiarities of constitution, and still more to the influence of disease. In most of the febrile affections,

vomiting is readily provoked—while in mania, epilepsy, and tetanus, it is extremely difficult. This is also remarkably the case with respect to cynanche trachealis.

Emetics do not immediately display their effects. An uneasy vermicular sensation of the alimentary canal, attended with some nausea and chilliness, a pale countenance, and a pulse feeble, quick, and irregular, are the first indications of their action. As soon, however, as vomiting is induced, the face becomes flushed, the circulation is more vigorous, though still comparatively weak, and there is a glow on the surface. The operation having ceased, the system is left languid, with a disposition to sleep, which is interrupted for some time by slight occasional sickness. The skin is cool and moist, with more or less perspiration, and the pulse, which continues weak, is slower and fuller.

In a curative view, the leading effect of an emetic is the evacuation of the stomach. This alone is a very important consideration, when we reflect on the extensive influence of this organ, and how dangerous are the consequences which often ensue from the retention of its acrid, vitiated, or oppressive contents. The same inverted motion which empties the stomach, is also extended to the duodenum, and, in some measure, to the inferior portions of the intestinal tube—and, while the united powers of the diaphragm and the abdominal muscles compress the gall-bladder, and force out its fluid, vomiting expels it. Emetics in

this way promote the secretion and evacuation of bile, perhaps, also, of the pancreatic liquor, and undoubtedly afford much relief in the engorged states, or sluggish circulation of the abdominal viscera.

It has been maintained, that the bile exists in the stomach previously to the inverted peristaltic motion. This may sometimes be true, though, were it uniformly the case, the discharges would take place in the first efforts of puking, which rarely happens.

The extensive dominion of the stomach over the animal economy, and especially the surface of the body, was formerly noticed. By virtue of this intimate connection, one of the effects of emetics is, to induce a universal relaxation, approaching, in some instances, even to syncope, of which state of system the extreme vessels partake, and perspiration breaks out.

It has been questioned, I am aware, whether so close a sympathy prevails between the stomach and the exterior surface, because diaphoresis is not uniformly the consequence of vomiting. But I really cannot perceive any force in the argument, since it only proves, that emetics, in common with all other remedies, are precarious in their operation.

An effect of this class of medicines hardly less obvious, is the promotion of absorption. No one has attempted to withhold from them this valuable property, though the precise manner in which it is accomplished, is not so manifest. They act, in the opinion of some, immediately on the lymphatics, exciting these vessels to an increased effort.

But, whoever carefully attends to the phenomena of absorption, will be persuaded, that this function is always most vigorously carried on when the body generally, and particularly vascular action, is much reduced. This fact is amply confirmed by clinical experience, and hence the conclusion, that those medicines invigorate absorption by an indirect effect.

Emetics seem also to act on the kidneys, and, in some instances, certainly produce a copious flow of urine. Whether this is owing to a diuretic property in the medicine, or the quantity of drink taken at the time, or the mechanical compression of the kidneys during vomiting, or to the arousing the lymphatics, has not been satisfactorily determined. My conviction is, that they promote the urinary discharge, independently of absorption, since I have witnessed this effect in cases where no dropsical effusions existed.

Of the close relation between the stomach and head, we are fully aware. Emetics, on this account, most conspicuously operate on the brain, and form an important set of remedies in the diseases of that organ, and its dependencies. Nor, perhaps, have they a less striking affinity to the pulmonary organs. As soon as nausea takes place, we may remark a copious flow of saliva, and a discharge, more or less, from the bronchiæ, which, when vomiting is induced, becomes considerably augmented.

Emetics, while thus displaying a specific relation to certain organs or structures, and hence so useful

in the diseases of these parts, have also a more diffusive operation, and, by the strong impression which they create, prove serviceable in breaking up deep-rooted affections, of a constitutional, or general nature.

Before I proceed to the application of these medicines to the cure of diseases, I shall suggest a series of precepts, to be attended to in their exhibition.

1. When the vessels of the head are full, or there is much general plethora, the emetic should be preceded by the loss of blood. Two advantages result from this practice. It renders the vomiting safe, and more easy and effectual. By neglecting this admonition, many a life has been either endangered, or sacrificed, by apoplexy or hæmoptysis.

2. When the necessity is urgent, and a certain and powerful operation is demanded, give a large dose, and of the most active species. Even here, however, we should avoid an excessive quantity, particularly of the mineral substances. I have known death to be induced in several instances of mania a potu, and once in croup, by the inordinate use of tartarized antimony. Where there is extreme difficulty in provoking vomiting, we should enquire into the cause, and endeavour to awaken susceptibility, by the appropriate means. Being occasioned by cerebral torpor from poisons, the proper antidote should be administered—and in the case of narcotics, cold applications to the surface, and to the head particularly, will be found eminently useful. In most other instances, venesection, and the warm bath,

prove equally effective. But, in ordinary cases, administer the medicine in divided quantities, to guard against too violent an effect. Having in view protracted nausea, or merely emptying the stomach, without any general impression, we must select the article, and regulate the dose accordingly.

3. Where the object is to make a strong revolutionary movement in the system, little drink should be allowed. But if it be to evacuate the contents of the stomach, large draughts of tepid water, or some other light drink, as warm chamomile tea, will promote this end, and, at the same time, facilitate vomiting.

4. As a general rule, emetics should be given on an empty stomach, and in the morning, acting then with greater certainty, and less distress. They will, however, answer very well in the evening—and, where an apprehension exists of the patient taking cold, ought to be exhibited in bed, at the hour of rest.

5. To check inordinate vomiting, direct the antidote of the article taken, and afterwards laudanum, combined with some cordial—apply fomentations to the pit of the stomach, and sinapisms to the extremities. Chicken water, copiously drank, is sometimes useful, by turning the action downwards. When these fail, anodyne injections may be resorted to, and a large blister should be applied over the epigastric region.

SECTION IV.

The Practical Application of Emetics.

NEXT I am to point out the use of emetics, in the treatment of diseases. But, in doing so, I shall enumerate only the more prominent cases in which they are employed.

The first, or general division, of the febrile affections, is into idiopathic and symptomatic, or into such as are original, and without any local affection,—and into the reverse. Of all the distinctions introduced by nosology, this is, perhaps, not the least absurd and unfounded. Every fever, whatever may be its nature, is necessarily secondary or sympathetic, dependant on some primary local irritation. To illustrate this position, we need only recur to the origin of the different febrile affections.

It will be admitted, without controversy, that such is the case, as regards the fever induced by wounds and other injuries. We here distinctly trace the effect to the cause, and perceive the disorder in the

blood vessels to be owing to the local irritation. Nor is it less obviously true, in relation to the fever excited by variolation, or, indeed, by inoculation with any virus. In this case we have the single pustule, which, in its progress, extends its influence, involving, successively, other parts, till, finally, fever arises, which eventuates in an eruption, more or less extensive, according to circumstances,—each pustule of which is precisely similar to the primitive or parent pustule, containing a virus of the same nature, and capable of exciting an identical disease. That here the general proceeds from the topical affection, is demonstrated by the fact that it is completely or very much under its controul. Whatever allays, changes, or removes the topical irritation, correspondently affects the general disturbance of the system. It is well known, for instance, that, in the early stage either of the vaccine or variolous pustule, if it be interrupted in its career to maturity, by rubbing, by irritating applications, or in any other manner, we prevent the infection of the system at large,—or, if it be infected, it is with the same sort of spurious action which had been induced in the pustule itself. Caution is hence so studiously inculcated, in the practice of variolation and vaccination, to preserve the integrity of the pustule, lest its specific effects may not be attained. Delayed, however, till the system fully participates in the action which it creates, and that action is established and confirmed, it then becomes independent of the

original source, and it is immaterial whether the pustule be molested or not.

Nearly on the same footing must we place the febrile condition occasioned by the action of poisons, such as arsenic, opium, and other corrosive or narcotic matters. Not long after the reception of them we find the stomach offended—irritation or inflammation commences, and ultimately the febrile movement. By merely casting them out, and quieting the state which they have created, the vascular excitement, consequent on it, subsides. But where they have been permitted to remain too long, and fever is confirmed, then such efforts will be unavailing. In hectic fever, which always proceeds from some topical irritation, and not from the absorption of pus, as was once supposed, we have a further and most conspicuous illustration to the same effect.

The position which I have laid down is, so far at least, indisputable. By tracing the phenomena, we shall also be persuaded that it not less holds, as applied to what are denominated *idiopathic* fevers. Each of these is caused by marsh effluvia, or contagion, or the variations or excesses of temperature, or an epidemic state of the atmosphere, or some other general morbid agency. Now it is sufficiently clear, to my apprehension, that, as regards the morbid matters mentioned, they are only admitted into the system by being entangled with the saliva, and swallowed. It is hence on the stomach that they must primarily operate, and the blood vessels are secondarily implicated,

through the medium of the close sympathy which is entertained by these two portions of the animal structure.

It must be confessed, however, that there are some who still believe that the lungs constitute the avenue through which these poisonous effluvia pass into the system, or are the point on which they operate. It is alleged, and I confess plausibly, that inasmuch as the lungs and their appendages are lined with a continuation of the mucous tissue of the *primæ viæ*, and being even more accessible to atmospherical impregnations, there is no reason why they should not be primarily affected. But we are to recollect, that portions of the same membrane allotted to different structures, vary in their properties, and are endowed, to a certain extent, with specific sensibilities, according to the function they are destined to perform,—not the least striking proof of which is afforded in the pulmonary apparatus itself. The Schneiderian membrane, which is a part of the lining of the trachea and its ramifications, has the exclusive cognizance of odours, of which the residue is utterly insensible. These modifications in the condition of tissues, is owing to their peculiar composition, as well as the degree and kind of nervous influence, with which they are supplied. We are, therefore, not to infer from the apparent similitude of tissue, an entire identity of qualities or results.

The latter part of the allegation to which I have alluded, is, moreover, rendered improbable by the comparative insusceptibility of the lungs to impressions,

and the former is further confuted by the fact, that no one constituent of the atmosphere is thus introduced. Experiments most conclusively show, that it is the function of the lungs to excrete or throw out matter, and that nothing in the place of it is received. Whether this be so or not, the validity of my hypothesis is not at all affected, as these organs are still the spot at which action first commences. What, however, lends the strongest support to this view, is the fact, that miners, and other workers in minerals, are protected against the poisonous effects, from the exhalations which are thrown off in their operations, by, previously to such exposures, taking even a very small portion of aliment or drink. It is stated by Dr. Paris, that the men in the mines of Cornwall, whenever they are exposed to the arsenical vapour, have recourse to sweet oil, the utility of which is so well ascertained, that an annual sum is allowed by the proprietors in order that it may be constantly supplied. Nor is this a solitary fact of the kind. My own experience strongly inclines me to suspect, that a similar expedient affords an equal protection in our intercourse with contagious and miasmatic diseases. I have always ascribed my escape from yellow fever, in my repeated attendance in it, to the practice, as a preventive, of eating before entering the infected district—and it is quite certain, that it proves effectual, in some degree at least, in counteracting the causes of intermittents, and other autumnal complaints, as well as typhous fevers.

Taking food into the stomach may operate, in this case, in one or both of two ways,—by protecting the surface of that organ on which such matters act from contact with it, or by exciting the process of digestion, by which they are destroyed. The efficacy of the measure is at least so well understood in the miasmatic regions of this country, that it has become a common practice among the inhabitants, not to leave their houses in the morning without breakfasting, or taking a cordial drink, emphatically denominated an *antifogmatic*.

No diseases exhibit more satisfactory evidence of gastric origin than the whole of the exanthematous fevers. To detail the arguments by which this pathological view is sustained would lead me into a very wide digression. It may suffice to remark, that they are derived from considerations of the symptoms, phenomena on dissection, and mode of cure, of these affections.

Commencing invariably as they do, with much disorder of stomach, this is, for the most part, removed or mitigated by the appearance of the eruption, and a deadly sickness as uniformly reverts, on a sudden recession of it from the surface. The same thing happens in cases, where it is susceptible of demonstration, that the stomach is primarily affected. It is well ascertained, for instance, that when this organ becomes disordered by tainted or poisoned food, as by fish a little spoiled, or which have fed on mineral

banks, an eruption or efflorescence generally appears, productive of more or less relief.

Examinations, *post mortem*, constantly show, in the exanthemata, where the disease has not been thrown out, the mucous coat of the *primæ viæ* marked by a species of erysipelatous inflammation, and such cases are always of a typhoid or malignant nature. In my opinion, few propositions are better established; than that the feature of malignancy in disease is, under most circumstances, derived from the stomach. We might, indeed, affirm, on sufficient grounds, that such a condition is exclusively owing to the ventricular energies being so crippled, that they can no longer sustain the general tone of the system, and hence it sinks into debility, attended by the groupe of symptoms to which we apply this epithet.*

To the difference between natural and inoculated small pox, we may appeal, as a farther, and, perhaps, stronger illustration to the same purport. By opposite states of the stomach, only, can we account for the gradations of violence in the two forms of this fever—in the former, it being affected primarily, and in the latter secondarily. Disease is severe or otherwise, according to the importance of the organ attacked, the power and extent of its connections, and the kind and amount of the injury received. The sympathies of the stomach, in variety and extent, are paramount to every other part: hence, when it is acted on by the

* "Ventriculo languido, omnia languent."

variolous matter, these sympathies being greatly deranged, the casual small pox, with vehement symptoms, is the consequence. But, in the process of inoculation, the virus attacking only a small portion of the skin, the sympathies of which being comparatively weak and limited, the effect must be proportionably moderate. Were the variolous poison actually conveyed into the blood, and did it produce its effects through the medium of that fluid, it would be of no moment, at what point of the system it was introduced. The whole of the blood passes through the heart, and becomes intimately commingled in the circulation. Let any part of this fluid, therefore, be vitiated, and we vitiate the whole, and the disease, under all circumstances, must be the same. How far these speculations concerning the origin of the exanthemata are confirmed by the treatment, will hereafter appear.

Even the fevers, excited by the extremes or vicissitudes of weather, are obedient to the same law, as to their mode of production. Cold, which is a very prolific cause of such affections, acts primarily on the skin, and, by consent of parts, may attack the lungs, as an immediate effect, producing inflammation of these organs, in the form of pleurisy, or peripneumony. But, should the throat or joints, &c. be in a greater degree of predisposition, the attack will be invited thither, through a similar mediation, and an angina or rheumatism, or some other of the phlegmasiæ, results.

In the same manner, or, to speak, perhaps, with greater precision, on the same principle, does heat operate in the causation of disease. By virtue of an established sympathy, the impression on the surface, from a high degree of temperature, is extended to the stomach, which becoming irritated, there is a general disturbance of the functions. The bowels, however, being in a more susceptible state, there will be, as the effect of the same cause, some one of the enteritic complaints, as colic, diarrhœa, or dysentery, &c. The only difference, therefore, in the mode of action of the two sets of causes in the origination of fever, is, that in the first, the impression is primarily made on some internal organ, and extended by direct sympathy: whereas, in the second, it occurs on the surface, and is extended internally, by reverse sympathy. It were a waste of time to proceed further with illustrations of the *modus agendi* of the other causes of fever. The principle is the same in all cases.

Were more required to show the secondary or sympathetic nature of fever, it might be found in the disposition and functions of parts. There are certain surfaces only on which morbid, or indeed remedial agents can act. These are, the *primæ viæ*, the organ of smell, the skin, and possibly the lungs and their appendages. It is on the sentient extremities of the nerves of these parts, and not the blood-vessels, that the impression is made. The nerves, thus irritated, communicate the impression to the brain, which, as the *sen-*

strium commune, is the receptacle of all impressions, reaction takes place, and then, for the first time, do we perceive the febrile commotion. The fever is always in the ratio of this reaction, and is modified accordingly. When the impression on the cerebral and nervous systems is slight, it is open, violent, and inflammatory, and being intense, particularly on the stomach, it is the reverse, and we are presented with various degrees of typhoid prostration. Thus, from the very nature of things, the blood-vessels cannot possibly be the medium of any primary operation. The disturbance to which they are exposed, denominated fever, is a secondary effect, derived from the nerves, irritated by the impression of some cause applied to the tissue, into the composition of which they enter.

Conformably to these views, fever of every description has its origin in local irritation, which is spread more or less, according to circumstances. The stomach, however, from its central position, and extraordinary sympathies, seems to be the organ most commonly at first affected, and, when the morbid action is not at once arrested, diffuses itself by multiplying the trains of association, till the disease becomes general, involving, in a greater or less degree, every part of the animal economy. It is in this way that diseased impressions made on the stomach are imparted, generally, in the first place, to the chylopoietic viscera, with which it is connected, as well by an immediate sympathy, as, in some degree, by an identity of function—thence to the heart and

blood-vessels, and finally to the lungs, the skin, and other important organs. It follows, therefore, that, instead of considering fever as merely a primary, independent affection of the blood vessels, we are to extend our views of it, so as to embrace within its scope the whole animal machine, in all its parts and functions, and, as I believe, particularly, though so little regarded, the capillaries.

This is not the place to exhibit any detailed physiological view of this important section of the sanguiferous system. I shall, indeed, do little more than remark, that in the movement of its blood, it is to a certain extent independent of the heart, and other powers of the general circulation—and that to it is confided the high offices of secretion, nutrition, exhalation, the evolution of animal temperature, &c. These are points illustrated by the admirable researches of Bichat, and which, I think, must be received as fully established.

In the early steps of fever the general circulation is disturbed, and subsequently the capillaries become involved. That such happens is shown by the fact, that if the cause of the vascular commotion be withdrawn in the first stage, the fever at once subsides. What is the primary effect of violent exercise, or any stimulant or irritant, applied to a susceptible surface? Do we not find an increased force and velocity given to the circulation? Does this, however, constitute fever in the proper sense of the term? It is, surely, a temporary excitement only, which passes away with the removal of the cause by which it was raised. He

who runs a mile, or drinks a generous glass of wine, or is roused by any passion or emotion, will have his circulation in such a state. Let, however, these, or any other under impulses, be protracted, and they are felt, sooner or later, by the capillaries, and then there is added to this condition the disorder in the several functions, which we recognise under the title of fever. It is at this period we have vitiated secretions, suspended nutrition, the exhalations variously affected, and animal heat augmented or diminished, or unequally diffused. The organs by which these operations are performed become morbidly deranged, and the changes noticed necessarily result. Being, however, restored to their healthy actions, we have all the manifestations of convalescence. It is now we perceive the discharges alvine, urinary, and perspiratory, becoming more natural, the secretions from the mucous surfaces similarly improved, the temperature of the surface equalized, the pulse reverting to the ordinary state, and with this subsidence of the febrile movement, a revival of appetite, digestion, assimilation, nutrition, and every other function.

Let us see a little in detail, how far this reasoning is verified by practical experience, the best, and, perhaps, the only test of the correctness of a theory. Called to a case of a wound, or other injury, or where poison was ascertained to be in the stomach, attended by fever, no doubt could exist, as to the nature of the primary irritation, or of the treatment to be pursued. The fever here is acknowledged to be a secondary af-

fection, and attention would be paid by every practitioner, to the removal of the original source of it. As regards the idiopathic fevers, so called, though the practice is virtually right, it seems not to be directed by any precise, or well defined views, and, very often, great errors are committed. Taught, however, that such fevers have their origin, also, in local irritation, is it not equally important, in the commencement, to endeavour to do it away? Being persuaded, for instance, that the case depended on some morbid irritant in the stomach, as miasmata, or contagion, or an accumulation of acrid bile, or that by reverse sympathy from the influence of temperature on the surface, the primæ viæ or the lungs or joints were irritated or inflamed, would not common sense dictate the application of remedies the best calculated to overcome this state of things? Do we not know, that an emetic in the early stage of miasmatic fevers, and in typhous, and above all in the exanthemata, sometimes completely arrests their progress, either by expelling the offending matter, or by breaking the links of the forming chain of morbid association? Nor it is less clear, that in the inchoative state of pleurisy or rheumatism, and similar affections, the timely use of cups, or leeches, or blisters, or sinapisms, or rubefacients, or, in a still earlier stage, while the skin is only under the morbid influence of cold, that warmth and the mild diaphoretics, will be productive of analogous effects in such cases. As, however, previously stated, the blood-vessels having, by time, become fully involved, and established an independent action, such a

course will prove comparatively ineffectual, and general remedies addressed more directly to the circulatory system, as venesection especially, must be employed. The object is to tear up the morbid plant before its roots are fixed, its growth attained, and its branches spread in every direction.

It seems, from what has been said, that, in the commencement of fever, or while the diseased impression is confined to the general circulation, it ought to be relieved by venesection, or puking, or purging—and is not this usually the case? But the capillaries being implicated, we must recur to remedies acting more immediately on this set of vessels, as blisters, diaphoretics, and mercury—which last is so universal in its operation—pervading every part, and entering every recess of the body—that the whole is affected by its revolutionary influence.

To render this reasoning more intelligible, I will illustrate it by one or two familiar examples. Topical inflammations, which refuse to yield to the most copious evacuations of a general nature, are known to submit, sometimes, very promptly, to leeches or cups, or blisters, or other local applications. These prove successful, because they are addressed directly to the capillaries of the part, which, as Bichat has proved, are, under all circumstances, the seat of inflammation. In like manner, the general remedies above enumerated, in fevers, reach the whole of the capillaries, subvert the existing morbid actions, and reinstate the order of health.

These are views of fever, which I deliver with much diffidence, believing, however, that they are true in theory, and which I know to be useful in practice. They teach the mode, as well as the place of the origin of these different affections, and enable us to eradicate or destroy the disease in its forming stage, by a recurrence to the appropriate measures.

It is obvious, that great injustice must be done to any speculations on the complicated subject of fever in a mere sketch. But a more detailed and finished exhibition would be wholly unwarrantable in a work on the *materia medica*, where such discussions can only be introduced incidentally.

Doctrines so analogous to the above, have lately been promulgated by M. Broussais, that, without an explanation, I might, perhaps, incur the imputation of plagiarism. It is, however, a matter of notoriety, that I held and taught them, for many years prior to the appearance of any of the writings of the Parisian pathologist on the subject. To *Zoonomia*, a work, at present, too little studied, I owe the obligation of the original suggestion of this, and many other of my theoretical notions. But I have since learnt, that nearly similar doctrines are to be met with in much earlier writers.

It may be deduced, from the preceding reasoning, that emetics are highly important remedies in fevers, which, for the most part, are attended, in the commencement, with nausea, vomiting, or other indications of disordered stomach. They, under such

circumstances, are productive of much advantage, and have been recommended from the earliest times. Even Hippocrates was apprised of their utility, and the practice, as before remarked, seems to be the obvious suggestion of nature.

Emetics clear the stomach of its noxious contents, and prepare the way for the reception of other remedies. Yet, they are not always necessary, as gastric distress may sometimes be allayed by an agreeable mixture, as the neutral or effervescent draught, and then a purgative substituted. Being, however, more than ordinarily vehement, it will be right in fevers with such symptoms, whatever may be the type, whether intermittent, remittent, or continued, to resort to an emetic, and to repeat it, if a successful impression be not made by the first exhibition.

That I am much attached to emetics in this class of diseases, will be perceived. Experience has persuaded me of their superior efficacy to purges, as a preliminary measure, and I am sure, that I have the support of those practitioners, who are most conversant with the inveterate shapes of autumnal fevers.

There is a fashion in medicine as in all other things. Emetics, which, at one time, were universally resorted to in such cases, and of the utility of which, we had a collection of seemingly undivided testimony, in one of the revolutions to which the practice of our art is exposed, came, very suddenly, to be supplanted by purgatives, as a less disagreeable mode of evacuation. But their reputation is reviving, and, of late

years, they are much more used, especially in those sections of our country in which bilious fevers prevail to the greatest extent, and are marked by most violence.

Exhibited early, an emetic operating well will frequently check an attack, and, in the more advanced stages, judiciously repeated, we shall find the pulse reduced, pain in the head relieved, sickness of stomach appeased, temperature of the surface lowered, with diaphoresis, which restores quietness, and hastens a critical solution. Even after the stomach has been thoroughly evacuated, so as to leave no suspicion of foul accumulations of any sort, active vomiting every morning, for a succession of days, I have found very effectual in the cure of obstinate intermittents maintained by the force of habit, and not visceral obstruction.*

Of the powers of an emetic in the prevention of the paroxysm, as well as in the mitigation of it, under ordinary circumstances of the disease, we are sufficiently aware. But it may not be so generally known, that in its malignant shapes, where, in the cold stage, reaction does not take place, and, as a consequence, undue accumulations of blood exist in the brain, or lungs, or some of the abdominal viscera, inducing a perilous state of things, that active vomiting is productive sometimes of the most important effects.

* This practice I have pursued for many years, and thought it original with the people of Virginia, my native state, whence I derived it. But I find it inculcated by Alexander of Tralles.

As to the use of emetics in pestilential fevers, medical opinion is not so decided. They were, at one period, much prescribed in the commencement of typhus, and now are not neglected. The innovation, in this case, partial as it is, has been no improvement, nor are the views which led to it correct. Emetics, however beneficially they may operate as mere evacuants, produce effects not less salutary in another way. Whatever may be the cause, fever, as has already been shown, is a result of sympathy, having, for the most part, the primary link of its ultimately lengthened and complex chain, in the stomach. To expel, therefore, the offending cause, or to subvert the nascent impression which may be created, before it becomes invigorated, diffused, and fixed, vomiting is obviously the remedy. Nor does the utility of this practice rest solely on speculative grounds. It has long since been proved, in the malignant fevers abroad, not excepting the plague, and, we are told, its efficacy was sometimes great, when well timed, in that shape of pestilence, which for a series of years so severely desolated our cities. Yet, it cannot be too often repeated, or strongly impressed on the mind of the practitioner, that it is in the forming state of this description of fevers, that emetics are at all admissible. Directed in the more advanced stage, or after the disease is absolutely confirmed, and pervades the system, they not only prove incompetent to its removal, but generally heighten the worst symptoms, and augment the difficulty of cure. This effect was strikingly exem-

plified, in the treatment of our yellow fever, and has been remarked in some other epidemics, as the plague, &c.* But such is not uniformly the case, as regards ordinary typhus. I have, indeed, sometimes recurred to emetics, with utility, in the second stage of this disease, where the tongue was heavily loaded—thirst great, and the stomach distressed.†

Emetics have been much recommended in puerperal fever. This is a disease, which so often proves obstinate in its career, and fatal in its issue, that every sound suggestion relative to its cure is worthy of attention. What renders it so unmanageable, it is not easy to determine. We hardly know, even, the seat of the complaint: much difference of opinion, at least, exists on the subject, and the practice is hence somewhat empirical and unsettled.

* The efficacy of emetics, given on the principle which I have suggested, did not escape the sagacity of Sydenham. "When I have happened," says he, "sometimes carefully to examine the matter thrown up by vomit, and found it neither considerable in bulk, nor of any remarkably bad quality, I have been surprised how it should happen, that the patient should be so much relieved thereby: for, as soon as the operation was over, the several symptoms, viz. the nausea, anxiety, restlessness, deep sighing, blackness of the tongue, &c. usually abated and went off, so as to leave the remainder of the disease tolerable." Commenting on this passage, Wallis, the annotator on the work from which it is extracted, very correctly observes, that "Sydenham was not aware of the sympathetic affections which take place in the constitution, nor knew that an extremely small portion of morbid matter could produce effects so sudden and surprising, from a local action, so as to derange the whole system."

† The late valuable work of Armstrong on Typhous Fever, contains some excellent observations on the use of emetics in that disease.

While some writers consider it as strictly an inflammatory affection, and urge the liberal employment of all the means of depletion, there are not wanting others, and of respectability too, who, influenced by a different impression, enjoin a mode of treatment directly the reverse. Nor is there less division of sentiment as to the precise seat of the disease. It has, in succession, been located in the uterus, in the peritoneum, in the omentum, in the intestines, and, in short, in almost every one of the abdominal viscera.

Commonly, I suspect, it has its origin in inflammation of the uterus, produced by rudeness or violence in the delivery, which extends more or less over the abdominal contents, according to the vehemence of the attack, and the predisposition of different parts. No doubt, however, the disease sometimes exists independently of uterine inflammation. It has been remarked, and I believe truly, that it occasionally follows the most easy labours, so as to preclude the idea of any injury having been suffered by the uterus or its dependencies. Not unfrequently, puerperal fever has prevailed as an epidemic, and, according to the best testimony, it consists, at such times, in little more than inflammation of the peritoneum.

Why this membrane should be so liable, after parturition, to this diseased action, is not very evident. May not, however, the predisposition be owing to the relaxation and debility, into which the peritoneum is thrown, in consequence of the previous distension by pregnancy? It appears to me not improbable,

that so long as the disease is confined to the uterus, or to any of the viscera mentioned above, it exhibits the phenomena of common inflammation, and is managed, without great difficulty, by the ordinary remedies in such cases. But, if the peritoneum be originally affected, or brought into participation, then the fever assumes a distinct shape, and betrays all those peculiar signs which denote inflammation of this membrane.

In every species of puerperal fever, venesection is of indispensable utility, though only in the early stages of the attack, to be aided by prompt and copious purging, an emetic, when clearly indicated, by fomentations and emollient embrocations to the abdomen—and, in the more advanced period of the disease, much may be expected from the regular exhibition of camphor alone, in large doses, or with opium and emetic tartar, and, finally, by blisters, or the spirit of turpentine externally applied, and internally given, so as to make a decided impression.*

Now and then I have also prescribed emetics in this disease, not so much to meet the general indications, as to relieve one most distressing symptom. In some instances the stomach is loaded with a dark offensive matter, which occasions great distress, and, allowed to remain, keeps up fever, and depresses the system into a typhous state. To evacuate this noxious

* For a further account of the use of turpentine in this disease, *vide* the history of that article, vol. ii.

matter, an emetic is indispensable, and its operation is often followed by effects prompt and satisfactory.*

The pathology of the exanthemata I have already briefly delivered. It would appear from the views presented, that emetics must constitute a leading ingredient in the management of these cases. But such as depend on a *specific* contagion will run a definite course in spite of all our efforts. Nature here works to the deliverance of the system, by a series of mysterious processes, which eventuate in the reproduction of the same sort of matter, which had originally excited the complaint. Disease is one of the curses entailed on our fallen condition, and, to perpetuate this particular class, it seems to be ordained, that we should be debarred the power of counteracting the agency by which the *seminal principle* is regenerated.

Nature appears in this respect to have taken the same pains, as in the protection of some other of her works, as is especially illustrated in the animal and vegetable kingdoms. By certain operations not to be controlled, the seed is there elaborated, and such is equally the fact with regard to the contagious diseases mentioned. Could we cure them, or rather arrest their progress to fruition, we should produce a chasm in the economy of the universe, which is not permitted us. Yet, in conformity with the general benevolence of providence, what we cannot

* This state of stomach occurs early in the fever, and is very different from that incident to the final stages, which, in every respect, bears a close analogy to the condition of stomach in yellow fever.

entirely relieve, we are enabled to palliate, and such is the amount of our best endeavours in small pox and similar affections.*

In most attacks of the exanthemata, it will be proper to commence the treatment with an emetic. By vomiting, the stomach is cleansed of its foul contents, its energies invigorated, and its salutary influence over the system generally secured. To promote the eruption when retarded, or to recal it when suppressed, this process is often imperatively demanded. Exhibited in the forming stage of most fevers, an emetic will be found to abate the vehemence of an attack, and to give to the case, in its further progress, a milder and more favourable aspect. Erysipelas of the face, particularly, I have benefited, or entirely removed, by timely vomiting—and, in several instances, have derived scarcely less advantage from the same remedy, when the brain becoming affected, stupor supervened.

Dessault, as well as most of the French writers, seems to consider the genuine forms of erysipelas as bilious affections, and strongly recommends emetics. But though, sometimes, the disease wears this aspect, the practice is not to be limited to such cases. Taken in the beginning, emetics are productive of the same

* *Lues venerea* would seem to be an exception to this general law. But it differs in two respects from other diseases dependent on specific contagions. It is not curable by the resources of nature, nor can it be reproduced by the virus of the constitutional affection, or, in other words, by the matter of secondary ulcers.

utility in scarlatina—and how much they are directed to cleanse the throat, and for other purposes, at later periods in the anginose form of the disease, it were needless to state. Their power, indeed, is so great, in reducing the force of scarlatina, in its first stage, and of changing the nature of the action, that some practitioners are reluctant to use them freely, lest the system may not be sufficiently affected to afford protection against a subsequent attack. This has lately been insisted upon by Dr. Richard Harrison, of London, who witnessed the effect most strikingly, in the treatment of scarlatina, which prevailed epidemically some years ago in that city.

Though, perhaps, not so efficacious as in the preceding diseases, emetics are sometimes useful in measles, as well for purposes already mentioned, as to relieve the pulmonary congestions from undue determinations of blood, or viscid accumulations in the bronchial structure, incident to the different stages of the disease.

To treat hæmorrhage, and particularly hæmoptysis, by emetics, was the practice of Dr. Bryan Robinson, of Dublin, and which, for a time, attracted considerable attention. Yet, I suspect, it was never very much followed, and seems finally to have been altogether abandoned, on the authority perhaps of Cullen, who, on trial, denounced it, on account of its temerity.

No doubt, however, they will occasionally check pulmonary hæmorrhage. I have seen spontaneous vomiting do it, in several instances, and the worst

case, which ever came under my notice, was completely suspended by a dose of digitalis, which puked violently. Yet, I concur with those who hold the practice to be hazardous, and would never resort to it, except under urgent circumstances, and where the ordinary remedies had failed. I speak, at present, in relation to cases in which there is a copious hæmorrhage, in consequence of the rupture of a vessel of some size. There being only a slight raising of blood, mixed with the matter expectorated, as commonly happens in tubercles of the lungs, they may be administered with perfect safety, and sometimes with advantage. Whether we have regard to the reduction of vascular action, or to the restoration of a just distribution of the blood, or to the removal of dyspnœa, or the abatement of cough, emetics are well suited to meet any or the whole of these indications. It is in this way that we, in part, imitate the effects of a sea voyage, and command some of its advantages. They, moreover, in some instances, check hectic fever, an ordinary concomitant on this state of things, or which speedily supervenes.

In support of this practice, it may be proper to mention, that it appears on good authority, that the late Dr. Willis, so celebrated for his skill in the treatment of mania, and especially the cure of the late king of England, was in the habit of recurring to emetics in all cases of hæmoptysis, and that he declared, the lengthened experience of nearly half a century had

taught him to confide in them above all other means, as well on account of their safety as efficacy. This is a practical point of great interest, and all my reflections on it, lead me to the conclusion, that emetics have been too hastily deserted. As much as any process whatever, vomiting has the effect of removing congestion, and rectifying the morbid states of the capillaries, on which hæmorrhage usually depends.

Of the decided utility of vomiting in hæmatemesis, I have long been aware, and resort to it under nearly all circumstances of the idiopathic form of disease, even where there is great debility and prostration. This is a consideration, indeed, which should rarely discourage us, since the energies of the system are almost invariably aroused by the process.

Emetics have also been recommended in menorrhagia. When I come to discuss the subject of emmenagogues, I shall endeavour to show, that menstruation depends on a secretory action of the uterus. As a part of the doctrine, I shall maintain, that all copious periodical discharges from the uterus, are to be considered as hæmorrhages, and not, as has hitherto been held, an immoderate flow of the catamenia.

I cannot, from my own knowledge, speak of the use of emetics in this species of hæmorrhage, and would greatly prefer, in the management of it, venesection, and nauseating doses of these medicines. Thus administered, we are told by Bergius, that they are highly serviceable, and by Althofe, his colleague in the school of Upsal, that, under their use, he never

lost a case. Though not prepared to go so far, I must say, that I repose much confidence in the practice, and that such is the result of no slender experience. How far emetics are proper in epistaxis, I am unable to determine from any experience. Governed, however, by analogy, I should be led in certain cases to resort to them. Epistaxis, though generally checked without difficulty, does sometimes prove otherwise, and even terminates fatally. When it presents such a formidable aspect, much, I think, might be gained by pretty active vomiting. That it is serviceable in hæmaturia, is admitted. But in this, and in every other instance of hæmorrhage, its use should be subject to those restrictions, pointed out in relation to hæmoptysis.

Every practitioner is acquainted with the utility of emetics in *cynanche trachealis*. It would be here out of place to expatiate on the nature and treatment of this disease. I cannot, however, pass it over without some few observations.

Croup has been divided into spasmodic and inflammatory, and not a little discussion has arisen on this subject. It appears to me, that in all cases where it suddenly attacks, it must partake of the nature of spasm. Time is required to induce inflammation, which consists in an altered action of the vessels of a part, effected by comparatively a slow process. No cause, however, more rapidly promotes it, than the disturbance occasioned by spasmodic constriction. It would seem, that the muscular fibres of

the larynx are in some instances primarily assailed, and hence the spasm, which, continuing, brings that and the other tissues into inflammation—while, in other cases, the mucous coat is from the commencement the seat of inflammatory action. The early symptoms correspond exactly with this view of its pathology, and dissections fully confirm it, showing, where death promptly happens, none of the phenomena of inflammation. But, under opposite circumstances, or where the disease slowly comes on, or is the effect of inflammation of other parts, extending to the larynx, then, of course, it is of a contrary nature, and inspections after death have revealed such appearances as might have been anticipated.

Even admitting the distinction contended for, I am not aware that it leads to any practical difference, especially as to the use of emetics. No one disputes the indispensable necessity of puking actively in the commencement of this disease, whatever theory may be entertained. Yet, unhappily, as I have before remarked, croup is one of those cases in which we often have to encounter great difficulty in getting the remedy to operate. What is now to be done? Nothing is so effectual as the warm bath, with venesection in extreme cases *ad deliquium animi*. Never have I witnessed an instance in which these means, combined, did not succeed in awakening the susceptibility of the stomach to the action of an emetic, and effecting all that can be expected from the most free and copious vomiting.

Nor, in the more advanced stages of croup, are emetics scarcely less demanded. The disease having continued for eight or ten hours, and sometimes even for a shorter time, it extends itself to the bronchiæ, and into the very substance of the lungs, producing vast accumulations of mucus or phlegm, or congestions of blood, as in the different forms of peripneumonia notha. Being loaded and oppressed, these organs imperfectly execute their functions, which is indicated by all the symptoms incident to such a condition. To relieve the engorgement, and to re-establish a free and equable circulation, are now the important indications. Copious vomiting, by an active and stimulating emetic, while the patient is in a warm bath, is among the most effectual of our means, and particularly when followed up by a blister or cups, or both, the former to the breast and the latter to the back, with the liberal use of calomel.

Closely allied to croup is cynanche laryngia. This is a disease which has lately been brought into notice. The first regular account of it is contained in a paper by Dr. Baillie, published in the year 1809.* It has since attracted considerable attention, and many cases of it are reported in the different European journals. Curiosity, thus excited, has led to researches into the older writers, and, we are told, it appears to have existed from the earliest times.†

* Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge, vol. 3.

† Notices of it are said to be met with in Hippocrates, Tulpius,

This disease may be distinguished from croup, by an exemption from the cough and peculiar intonation of that affection—by the period of life at which it occurs—the first being chiefly incident to childhood, and the second to advanced age,—by redness of the fauces, and by tenderness of the larynx on pressure: and from cynanche tonsillaris by the absence of tumefaction.

Concerning the treatment, a few words will suffice. It consists, in the beginning, of the most copious venesection, urged even to syncope in violent attacks,—to be followed by a large employment of leeches, an epispastic application, and active purging with calomel. Emetics would seem to promise much in the complaint, though they are not generally recommended. By Armstrong, however, their utility is strongly insisted on, and, in evidence of it, he gives the result of five cases, completely relieved “by free and frequent vomiting.”*

Emetics are favourite remedies in some of the other anginose affections. Early employed, I know of nothing more effectual in the ordinary inflammations of the throat. It was once a common practice, and is still recommended by some, to excite puking for the purpose of rupturing the abscess in the severer attacks of cynanche tonsillaris. The plan, though often successful, was productive of great pain, if not danger,

Lommius, Meade, Boerhaave, Morgagni, &c. The illustrious Washington seems to have died of this disease.

* Armstrong on Typhous Fever.

and is now generally abandoned as unnecessary, the abscess being very readily punctured. In the ulcerative stage, however, and, particularly, where it assumes the aspect of malignity, emetics may be resorted to with decisive advantage. They improve very much the condition of the ulcers, which, being cleansed, take on a disposition to heal.

In many of the complaints of the chest emetics are employed. Catarrh, in the commencement, is often arrested by them, and also in the subsequent stages is much relieved, after some loss of blood, and, particularly, when attended with dyspnœa, or oppression, from congestion of any nature. To peripneumonia notha they are no less adapted, and sometimes render great service, by *emulging* the bronchial structure, and re-establishing an equilibrium in the broken and irregular circulation. On the same principle, they were prescribed in the pneumonic forms of our late winter epidemic, the *peripneumonia typhoides*—and have, indeed, been found advantageous in, perhaps, every case of engorged or suffocated lungs, of weak action, whether from blood or other fluids.

Thus, in bronchitis, their efficacy is sometimes strikingly exemplified. The pathology of this disease, though, I suspect, not generally well understood, is not obscure. It is simply, in the beginning, an inflammation of the mucous tissue of the lungs and their appendages, which, continuing, leads to effusions or extravasations. Not being expelled by expectoration, these choke up the bronchiæ and air cells, thereby me-

chanically impeding respiration, as well as that the decarbonization of the blood is prevented—and hence the heavy dyspnœa and livid countenance which attend the worse shapes of the disease.

Of bronchitis there are several species, some of which I shall cursorily notice. The most common is that which is known by the title of *catarrhus notha, vel suffocativus*. It usually attacks persons advanced in life, or of a feeble or debilitated frame with weak lungs. The second species is designated by the term *tussis, vel catarrhus senilis*, and is incident only to extreme old age. They differ, among other respects, in the latter having less activity of inflammation, though in both there is a profuse secretion of phlegm or viscid matter, which accumulates in the trachea, and its ramifications, occasioning *wheezing*, or even *rattling*, symptoms that are truly diagnostic of bronchitis.

The third species is almost peculiar to children, and may be called *infantile bronchitis*. Neglected catarrh is most apt to induce it, though I have repeatedly met with it as a primary affection. Commencing like a common cold, it soon, however, becomes marked by *wheezing*. The dyspnœa, now and then, so completely remits, that the prospects of recovery are seemingly very encouraging. But it soon returns, and, as the case advances, all the phenomena of a disturbed and interrupted circulation through the lungs supervene, as heavy respiration, flushed, or livid face, especially of the lips, which are

sometimes very dark. The child finally becomes comatose, and dies generally convulsed.

Touching the treatment of acute bronchitis, it may be observed, that, as there is little or no fever or pain, and as the subjects of it are mostly decrepit, enfeebled, or delicate, venesection is neither indicated, nor perhaps admissible, to any extent. But local depletion by cups or leeches—with blisters, are highly important measures. Emetics are not less so—which, indeed, with expectorants, and small doses of calomel, constitute nearly all that can be done. As it occurs, however, in children, some modification of treatment is required, and on the whole, active purging with calomel, will be found the most effectual process, which by the strong impression it makes on the *primæ viæ* diverts, apparently, diseased action from the pulmonary system.

The preceding are the ordinary acute forms of bronchitis. But it also exists as a chronic affection, which may be either the consequence of ill managed acute inflammation, or an original state of the mucous tissue. The latter, we are told by several respectable writers, is the more common case, which does not altogether accord with my own observations. I have usually found it the result of neglected catarrh, and, for the most part, in persons whose constitutions have been broken down by habits of intemperance. Drunkards are peculiarly liable to it, so much so, that a very large proportion of them, whether in high or low life, fall victims to it. In such cases, the affec-

tion sometimes proceeds from disordered abdominal viscera, with which the bronchial structure sympathises. Dyspepsia, and chronic hepatitis, are known to produce it—and, to show how intimate is the connection between different portions of the animal machine, it is stated on good authority, that bronchitis has resulted even from the irritation of worms. To the symptoms enumerated, as incident generally to bronchitis, I have now only to add, in relation to the chronic species of it, that dropsical swellings are very apt to be ultimate attendants on it, and especially œdema of the lower extremities.

In the management of the chronic disease, I have found no practice so efficient as the occasional use of emetics, moderate venesection where the pulse is corded, the alternate application of cups and blisters to the chest, with small doses of calomel and squills, or ipecacuanha, or the three united: and, in the subsequent stages, the tar pill alone, or with garlic, or asafœtida—and certain inhalations hereafter to be noticed.*

Conduct the treatment of these cases, however, as we may, they will too often baffle our skill. The disease, in its simple and elementary shapes, is occasionally curable, though sufficiently embarrassing. But such seldom occur, and, complicated as it is, for the most part, with extensive organic derangements

* Vid. Inhalations.

of various kinds, in a constitution shattered and decayed, what have we to hope, even from our best-concerted endeavours?

Emetics are commonly considered as not at all suited to genuine pneumonia. As regards the advanced stages, when inflammation is confirmed, this opinion may be correct, though at an earlier period they often prove very effectual, and, in some instances completely arrest the case. There is, especially, one variety of pleurisy, properly designated by the epithet *bilious*, a very common disease in our southern country, in which all agree that they are a most important remedy. To the characteristics of ordinary pneumonia, such as pain in the side or breast, with impeded respiration, are added, in this affection, many of the symptoms of our autumnal fevers. There is headache so violent, as to confer on it the popular title of *pleurisy of the head*—much gastric distress, and vomiting of bile, with a dark or yellow tongue, and a bitter, nauseous taste,—uneasiness in the region of the liver, and sallow complexion. It differs also from ordinary pleurisy in having less activity of inflammation—and, consequently, in not bearing, to the same extent, depletion by the lancet. The system, indeed, will sometimes sink under a single bleeding. Desisting, therefore, from venesection, or using it with moderation and care, we rely mainly on the thorough evacuation of the alimentary canal by antimonial emetics and mercurial purges, and subsequently on

diaphoretics—relieving the affections of the chest and head by topical bleeding and blisters. Stoll has given an excellent account of this form of pleurisy, and it is also noticed by Richter, who greatly extols the use of emetics in it.

In the fluctuations of our practice, in pulmonary consumption, emetics have had various degrees of reputation. But there are included under the general denomination of phthisis, affections of the lungs so widely different, that, without some nicety of discrimination, no successful application of the remedy can be made. It seems to be admitted, that, in catarrhal consumption, they are of service, prescribed in the early stages, on the reduction of inflammation, and, perhaps, still more so under like circumstances, in the genuine or tubercular form of the disease. To be decidedly useful, however, vomiting must be often repeated, and it has even been proposed to recur to it every two or three mornings, for a succession of weeks, under the idea that the effects of a sea-voyage might be attained. It is hardly necessary to remark, that, admitting its efficacy, this process, disagreeable in itself, could be borne to such extent by very few of the subjects of consumption. Nevertheless, the occasional use of emetics is not to be neglected. In their wide and pervading operation, they subdue, or have a tendency to subdue, vascular action, remove cutaneous constriction, promote absorption from the lungs, facilitate expectoration, lessen dyspnœa, cough,

and the sanguineous discharge, calm the system by equalizing excitement, and re-establishing that just balance in the distribution of blood, on which the restoration and maintenance of health so materially depend. It is in such language that an enthusiast on the subject expresses his confidence in the remedy, which, I fear, as regards the disease in a confirmed state, is in some measure refuted by melancholy experience.

Emetics are advantageous in asthma. Among other distinctions instituted in this disease, that of *humoral* and *spasmodic*, may, in some instances, be correct—and the two species occasionally exact some modification of practice. Yet, as to the use of emetics, I suspect it need not be very nicely observed. They generally afford relief in the paroxysm, and, timely administered, will sometimes prevent the recurrence of it. Cullen, I am aware, holds a more qualified language on this point. But he is, probably, wrong, and especially as regards the distinction which he takes between the spasmodic and pituitous or catarrhal species of the complaint.

Of the various remedies that, at different periods, have been suggested for the cure of pertussis, I know of no single one from which I have derived better effects, than emetics. To the earlier stages of the complaint they are chiefly applicable, and, where the paroxysms are violent, must be repeated daily, or sometimes even twice a day. By steadily persevering in this

course, with the auxiliary means, which I am hereafter to indicate, we shall generally be able to conduct the case to a comparatively speedy and successful issue, provided it be that of a child, as the remedy is not so well adapted to persons in more advanced life.

Emetics have been employed in the treatment of acute rheumatism. Having never used them in any of the forms of this disease, with one exception only, I must advance my opinion with diffidence on the subject. The particular exception to which I allude, is that species of rheumatism originating in districts exposed to marsh exhalations, where the attack, as sometimes happens, is blended with intermittent fever, and attended with accumulations of bile. They here prove serviceable, on a principle perfectly intelligible.

Nor have emetics been less prescribed, in the analogous affection of gout. By the practitioners of antiquity, they were made an essential part of the treatment, and came to be excluded, with other evacuants, pretty much through the influence of Sydenham, as we shall hereafter see more distinctly. During the reign of the humoral pathology, they were again brought into use to evacuate morbid matter, which was supposed to accumulate in the alimentary canal.

Of the late writers, who have most strenuously endeavoured to re-establish the practice, is Small, the author of a very good paper on gout, in which vomiting is recommended as affording prompt relief of the

pain and inflammation, as well as abridging the career of the paroxysm.*

That such may be the effect, I can readily believe, considering the nature of the case, and the unequivocal utility of purgatives in it. Yet, my experience with the remedy is too narrow to speak authoritatively. Emetics, at all times, are much resisted, especially in the higher classes of society, where we chiefly meet with gout—and this, not any want of confidence in their utility or safety, has prevented my using them. But, in certain cases, I have not hesitated to prescribe vomiting, as, when the stomach was greatly disordered, the tongue loaded, and the constitution unimpaired. Like rheumatism, gout is, moreover, in some instances, associated with intermittent fever, and these cases, which are to be met with in low countries, or in persons who have been transiently exposed to marsh exhalations, often require it for the cure, and even the use of the bark.

Emetics have, unquestionably, done much good in dyspepsia, and somewhat similar conditions of the stomach. My first step, generally, in the treatment of acute affections of this nature, is to resort to this remedy,—by the use of which we now and then succeed so completely in rectifying this viscus, as to put an end to the complaint—and, where so much does not happen, we at least pave the way for the more successful operation of other means. In confirmed cases also,

* Medical Observations and Inquiries, Vol. VI

attended by great depravations of stomach, as is evidenced by the coated tongue, sour eructations, cardialgia, pyrosis, gastrodynia, palpitations, affections of the head, &c. a recurrence to emetics is nearly indispensable to the cure. These, judiciously repeated, proper attention to the bowels, to exercise, to clothing, and a regulated diet, chiefly of milk and the lighter meats, without vegetables, will rarely fail to cure indigestion, and all its concomitants, without the employment of tonics.

What I have remarked is applicable only to dyspepsia, as it ordinarily appears. It not unfrequently happens, in the progress of these cases, that the state of nervous irritation, or of muscular relaxation, is exchanged for chronic inflammation, manifested by the sense of internal heat, tenderness of the epigastric and hypochondriac regions, with a corded pulse, in which emetics should be carefully avoided, and the lightest vegetable, substituted for animal food.

To some of the bowel affections, emetics are well suited. It was usual with Sydenham, and his example has been imitated by many, to commence the cure of dysentery by exciting vomiting, which he advised to be followed by copious draughts of some thin beverage, to cleanse more completely the stomach. Of the propriety of this practice, I am not prepared to speak from any personal experience. It may occasionally be useful in the early stage of the disease, where the stomach is loaded, as sometimes happens, with bilious or fouler matter, creating nausea

and distress. Cases of this sort are common in countries subject to intermittent fever, and, if the bowel affection wear such a character, vomiting becomes essentially necessary.

Emetics, in diarrhœa, are still more employed, and their utility, perhaps, is less disputable. But the complaint is dependant on such a variety of causes, and assumes such different shapes, that it is difficult to indicate, in a mere summary, the precise cases to which the remedy is applicable. Of course we should not hesitate to prescribe it, where there is reason to suspect the attack to be caused, or kept up, by a disordered stomach. Besides relieving that organ of its irritating contents, it checks purging, by inverting the peristaltic motion—and, relaxing the skin, produces perspiration, which, on account of the intimate connection between the surface of the body and the alimentary canal, proves salutary.

As a general rule, emetics are not applicable to cholera morbus. By cordials and opiates with calomel, it is chiefly treated, which, under ordinary circumstances, allay the irritation of the alimentary canal, the first step in the progress of the disease, and often completely arrest it. In other instances, however, it is presented in a shape which requires that, as a preliminary measure, we should rid the stomach of its oppressive contents, whether acrid ingesta or other matters. Diluent drinks are much prescribed for this purpose, and sometimes answer sufficiently well. But why the stomach should be thus deluged, instead of

being, at once, emptied by an emetic, I could never learn or comprehend. The effect of the latter is surely more prompt and complete. With this impression, I have, for some time, adopted such a course, and can discern no objection to it. By the emetic, which should be ipecacuanha, the stomach becomes relieved, and the system, which was before greatly depressed, now reacts, and we have a more open and manageable case. It even does more. As an immediate effect, the spasms are overcome, and, by determining to the surface, disease is invited from the interior, and the actions and excitement of the body equalised. Yet, where extreme prostration of strength exists, it should be avoided, or, at all events, preceded by the warm bath, frictions, sinapisms, and, above all, opiate enemata.

Emetics are no less suited to cholera infantum; when the attack comes on with such gastric distress, as to preclude the use of purgatives, or is not allayed by opiates, &c. That this is not the ordinary practice must be confessed. Little weight, however, ought considerations of this nature to have against the dictates of our own positive experience. Emetics, with a view of checking vomiting, are sparingly prescribed in most cases, and always in cholera with great solicitude and apprehension, proceeding, I am confident, from no just grounds.

Colic is another case occasionally treated, in part, by emetics. The pathology of this disease may be stated in a word. It consists, primarily, of spasm

of the muscular coat, of some portion of the alimentary tube, most commonly of the stomach or colon, which, by continuance, induces inflammation of the mucous and peritoneal coverings, and its ordinary consequences—exhibiting a striking example of the modification which diseased action receives from the tissue, in which it is located.

What causes the pain in colic is not ascertained. It has hitherto been considered as proceeding from spasmodic constriction. But this is not so manifest, as we should, at first, be led to suppose. Excepting in a few instances of the nature of cramp, spasm is not a painful state. Epilepsy, tetanus, and ordinary convulsions, are attended by no such effect. It is, I think, equally probable, that it is owing to distention. Certain it is, that, on the escape of flatus producing the distention, pain ceases. Dissections also show, in colic, the bowels alternately firmly contracted and largely distended.

Be this, however, as it may, emetics are important remedies in the disease. Of their utility in flatulent colic from offensive ingesta no one doubts, and in bilious colic, under the circumstances in which I have shown them to be applicable to cholera morbus, they are scarcely less serviceable, by the removal of spasm, and the consequent obstruction of bowels.

Mr. Hunter proposed vomiting to draw out the upper portion of the intestine, in intussusception, and purging in an opposite state, or when the lower portion is intruded. This is a very nice point to determine, and, though some information may be

derived from the result of the two processes, we shall find it, I suspect, a very equivocal practice.

To induce general relaxation, and to excite the biliary secretion, a deficiency or suspension of which, he considers as an accessary cause of some of the cases of obstinate, unrelenting constipation, in colic, Professor Hosack has given emetics, as he states, with great success.* Of the efficacy of the remedy I am persuaded, as well from the confidence reposed in the statements of that very sound and able practitioner, as by my own experience of it in somewhat analogous affections of the bowels, and with enemata of tartarised antimony in precisely similar cases, which, on the same principle, I have for many years employed. The practice, however, we are told, is not novel. Whether it be so or not, I think of too little consequence to inquire. He who revives what has become obsolete and forgotten, and applies it usefully, has nearly the merit of original invention or discovery.†

* The New-York Medical and Physical Journal, Vol. I., contains Dr. Hosack's interesting paper on this subject.

† The learned editor of the London Medical Repository, in a review of Dr. Hosack's Paper, has taken great pains to trace the practice through the older and more modern writers, and shows, that it was recommended by Hippocrates,* Praxagoras,† by Cœlius Aurelianus,‡ Alexander of Tralles,§ Stoll,|| Sims,¶ Sumiere,** and by Deplace.††

* Περὶ Νουσῶν, iii. opp. p. 491.

† Apud Cœl. Aurel. p. 243.

‡ Pp. 529—532.

§ Lib. iii. cap. 44.

|| Rat. Med. p. ii. pp. 135—138.

¶ Observations, p. 20, et seq.

** Journal de Medicine, Tom. LXI. p. 369.

†† Sedilot's Journal, Tom. XXXVI.

Many of the nervous and spasmodic diseases, have, undoubtedly, their origin, for the most part, in the *primæ viæ*, and can only be treated successfully, by keeping this fact steadily before us.

Of the class of neuroses, the one which appears to be sometimes most unequivocally a gastric affection, is epilepsy. Entertaining this impression of the nature of the disease, I have freely prescribed emetics in it, and with manifest advantage. By exhibiting them just before the accession of the paroxysm, they will often prevent it, and, even if they fail in this respect, they render it milder and of shorter duration. Nor is this all which they accomplish. By the strong and direct impression made on the stomach, the commencement in that organ of the wrong association constituting the disease, is broken, and afterwards it yields more readily to tonics.

Yet, it must not be concealed, that emetics are productive, sometimes, of mischief in epilepsy. I have known them, more than once, to bring on the fit, and with aggravation. It will be right, in using them, to avoid the cases primarily seated in the brain, or where any fulness of the vessels exists. To gastric epilepsy, I suspect, they are only suited.

Nearly the same views, I think, may be taken of hysteria. Even admitting that the disease is mostly radicated in the uterus, it does unquestionably often proceed from gastric irritation, and demands to be treated accordingly. Whatever may have been the immediate cause of the paroxysm, I have found, when

exceedingly vehement, no remedy half so effectual as vomiting. It promptly allays the convulsive agitations of the nervous system, and produces a state of mental composure which invites to sleep.

Emetics constitute a part of the treatment of many of the complaints of the head, or which, at least, in that part are most conspicuously displayed. They are frequently directed in apoplexy. This disease may be seated either in the brain or stomach, though it is more commonly brought on by accumulations in the latter viscus, the result of debauchery and excess. When thus occasioned, vomiting is obviously the proper remedy.

Encouraged by the success of emetics in apoplexy, some practitioners, and especially those of the continent of Europe, have recently urged the use of them in palsy. I have no experience on this subject, though were I to determine from the great efficacy of the drastic purgatives in this affection, I should not hastily condemn the practice.

That hydrocephalus internus does, in many instances, proceed from certain states of the chylopoietic viscera, is now admitted by the best pathologists. An irritated or oppressed stomach, I have seen excite the symptoms of the strongest marked cases of the disease, and which were speedily removed by puking. This is sufficiently intelligible. But the same sort of affection will occur, and of unquestionable gastric origin, though there may be nothing in the contents of the stomach to which it can be traced. Even under such

circumstances, vomiting occasionally proves useful, probably in the same way that it relieves some other cerebral complaints.

Emetics are certainly important remedies in mania. The forms of the disease, however, to which they are applicable, have not, so far as I know, been accurately discriminated. No one, I presume, would think of exciting vomiting in the more violent cases, where there is great arterial action, with high excitement of the brain. Nauseating doses, in conjunction with copious bleedings, general and topical, are here preferable. The first, in a very peculiar manner, subdues vascular action, reduce excitement, depress muscular power, and restore the mental and corporeal quietude of the patient. Nausea, thus kept up, will, in some cases, do more in these respects, than any other course of treatment.

Considering the intimate connection of hypochondriasis with certain derangements of the stomach, and particularly protracted dyspepsia, it would seem, that the strong impression of successive emetics might be salutary. Guided by this analogy, it has hence become a common practice in this city, and, determining from what I have seen, I should pronounce it deserving of much attention. It is peculiarly calculated to arouse the mind from its torpor, and, by eradicating the primary gastric affection, has, in some instances, which have come under my observation, effected complete cures.

It may, perhaps, be proper to repeat a remark which I formerly made, that mania, in all its forms, is one of those diseases in which the stomach loses, in an extraordinary degree, its susceptibility to the operation of medicines, and particularly emetics. This, I am inclined to believe, is even more conspicuously evinced in melancholia and hypochondriasis, than violent insanity. Whether the torpor of the stomach is the cause, or effect, of the morbid state of the brain, cannot be stated positively. But of this there is no doubt, that its removal, as in croup, is a pretty certain sign of a speedy convalescence. As such seems to be the case, would it not be right to address our remedies more directly to this organ, with a view of arousing it out of its indolent condition? To meet this indication, nothing promises so well as a succession of active and stimulating emetics. The effect of the remedy, in two or three cases of this description, has much strengthened these speculative notions, and authorize me to recommend the practice, with no small confidence of its success.

By a very ingenious physician of this city, Dr. Klapp, this mode of treating one species of insanity, mania a potu, or, as he terms it, from Sauvages, mania a temulentia, has been adopted, and, according to him, its superior efficacy is fully and indisputably confirmed. To this course, he says, he was led, by often remarking, that the subjects of derangement from intemperance, are apt to labour under vomiting

for several days before they become affected, and that, when the mental disease begins, the vomiting ceases : and, also, by having seen, that spontaneous vomiting, when it recurs in these cases, is generally attended with beneficial consequences.*

Governed by what I have seen myself, I should say, that such a report is not quite warranted. Exactly as in the other shapes of mania, where an insusceptibility to the action of remedies exists, emetics, in temulent affections, are of the greatest utility, and Dr. Klapp merits our acknowledgments for the extension of the practice. But susceptibility being awakened, all is done which can be effected by vomiting, and we must, to confirm the cure, in most instances revert to the stimulating articles hereafter to be noticed.†

Even some degree of circumspection is required in the use of emetics. The cases of the disease must be properly discriminated, or they prove detrimental or even fatal. Exhibited where there is much prostration of power, or, in other words, extreme exhaustion, the system will not react, and the patient inevitably sinks. Two cases of this kind came under my own notice, and several others have been reported to me.

In that distressing complaint, denominated sick head ache, one of the most heavy of the curses entailed on the sedentary and studious, much has been said of the efficacy of emetics.

* Eclectic Repertory, Vol. VII.

†. Camphor, opium, &c.

This is purely an affection of the stomach. It recurs periodically, and is preceded and accompanied by nausea, sour eructations, and other indications of imperfect digestion. Evacuations of the stomach alone will not cure it. The bowels must also be kept open, and the strictest attention to diet is demanded.

Externally, the head is liable to acute, and sometimes even to excruciating spasmodic pains, attended by an exquisite tenderness of the scalp. Though this complaint may not hitherto have arrested so much attention as to be accurately described, it has not altogether escaped notice. The plan of treatment pursued in this city, in some instances, after various other means had failed, was, to cut through the integuments, under a conviction that the case partakes of the nature of tic douloureux, and that, by dividing the affected nerve, a cure might be accomplished. What was the precise degree of success of the practice, I cannot say, though I suspect it afforded little encouragement, as I do not learn that it has lately been repeated.* Early adopting the notion, that this complaint proceeds from a morbid condition of the stomach, the only two cases of it which have come under my care, I managed by emetics, and had reason to be entirely pleased with the result. Even genuine tic douloureux, the neuralgia of some writers, has been cured, in several instances, by this same practice, and

* The practice has been tried in England, and failed.—BENDING—
FIELD'S *Medical Practice*.

with such facility, as to place it, in my opinion, decidedly above all other modes of treating this most painful, and hitherto nearly unmanageable affection.

The credit of employing emetics in this case, seems due to Dr. Physick, and is one of the many valuable contributions which the profession has received from his ample resources. Yet, it is not to be concealed, that there is a passage in the writings of Mr. Abernethy, which shews, that he also has adopted the same view of the pathology of the case, though he attains the practical end by means somewhat different, and, perhaps, not quite so prompt and efficient.*

It is, perhaps, not generally known, that Richter, a writer whom I shall often have occasion to cite, maintains, that many of the diseases of the eyes proceed, more or less, from a disordered state of the chylopoietic viscera, though chiefly the stomach, and this he thought to be especially the case as regards amaurosis. No one of the time had half his reputation, in this complaint, or, probably, an equal experience. His fame was so diffused, owing to his unrivalled success, that persons afflicted with it resorted to him from all the countries of Europe. He deduced his practice directly from the theory of the disease which he had adopted.

* "In the cases of tic douloureux, which have fallen under my observation, there has been great disorder of the digestive organs, and I have known cases resembling those of tic douloureux cured by correcting the unhealthy state of these organs."—ABERNETHY *on the Disorders of the Digestive Organs*.

Considering it primarily a gastric affection, he directed emetics, and afterwards a combination of tartarized antimony with some other articles, to keep up a constant impression on the stomach.

Though this hypothesis may seem incredible on the first view, I am convinced of its correctness. The more we study the economy of the stomach, the more we shall be enlightened on pathology, and particularly as to the diseases of the head. My practice has afforded me several cases of violent and intractable ophthalmia, that I could trace directly to a vitiated state of the stomach. Accumulations of bile in that viscus, have long been known distressingly to disorder the head, and affect the eyes, though the more painful and obstinate inflammations of these organs have not hitherto, I believe, been ascribed to this cause. That it does occasionally produce them, I am persuaded: of this, at least, there is no doubt, that they are speedily relieved by vomiting. Depraved vision, I have several times seen from spasms of the stomach—and one case, well authenticated, is in my possession, where total blindness took place, and continued for many hours, in consequence of a severe attack of bilious colic, and which was ultimately removed, by copious evacuations from the alimentary canal.

That emetics are useful in acute ophthalmia, is, now, indeed, pretty generally admitted. By many of the late writers, including Scarpa and Saunders, they

are recommended, and, we are told, were found singularly efficacious in that form of it which so violently attacked the British troops in Egypt. This is the statement of Sir William Adams, who is surely entitled to be heard on the subject.

On a previous occasion, I adverted to the active promotion which absorption receives from the operation of emetics. It may, therefore, be presumed, that these medicines have not been neglected in dropsy. They are undoubtedly serviceable in this disease, though it is not easy to designate the precise cases to which they are applicable. As a general rule, I may observe, that, exhibited with a view to their nauseating effects, they are to be preferred. But where dropsy arises from congestion, or obstruction in the biliary ducts, by gall stones or spasm, active vomiting is reported often to have been productive of utility. It acts, under such circumstances, by mechanical force, or, inducing general relaxation, removes the spasmodic constriction—in the same way that it proves occasionally serviceable in some other affections.

There is another case in which emetics are beneficially prescribed. It seems to be admitted, that when dropsy is connected with intermittent fever, or occurs in situations exposed to marsh effluvia, evacuations from the stomach are in some instances demanded for obvious purposes. With scarcely less advantage have I also sometimes prescribed them, where there was much torpor of system, and general insensibility to

the operation of remedies. Nevertheless, it is to ascites and anasarca, that this practice is chiefly restricted : no one, I believe, now scarcely ventures to try it in hydrothorax—and, though recently some cases of hydrocele are reported to have been cured by them, it was not so much by vomiting, as nausea perseveringly continued.

Emetics have sometimes been deemed necessary in diabetes. They are mentioned by Richter, as having speedily cured a case of the disease, which succeeded to fever, by the discharge of a large quantity of bile, and, as the stomach appears always to be more or less concerned in this disease, the remedy might probably be oftener resorted to, with advantage, than has heretofore been done.

Emetics were at one time much employed in hernia humoralis, and other morbid states of the testicles. Of their efficacy, in the first instance particularly, no one probably doubts. Being, however, a disagreeable remedy, and as we have other modes of treatment equally successful, they are rarely now prescribed. On the same principle, they were administered for the discussion of buboes, and other glandular tumefactions. The strong and decisive tone in which Mr. Hunter asserted their superior powers in the venereal swellings alluded to, had once the effect of inspiring the greatest confidence in their utility. I am inclined to believe this confidence was not misplaced. But, for reasons already assigned, the practice has

not often been imitated by me. The case to which it is most appropriate, is indolent bubo.

It may not be here entirely out of place to mention, though the subject will be noticed hereafter more fully, that the process of vomiting is exceedingly effectual in exciting the secretory function of the uterus, both in retension and suppression of the menses.

Emetics have been recommended in the bites of venomous reptiles, inducing constitutional affections. This was originally an oriental practice. But I have understood that it is at present a good deal followed throughout our western country, where people are often bitten by the rattlesnake and other poisonous serpents. Of its utility I cannot speak from my own knowledge, though, as in all cases of morbid poisons, the stomach is here very seriously, if not principally affected, I am disposed to entertain a favourable impression of it.

To induce extreme relaxation of the system by the exhibition of emetics in nauseating doses, is one of the resources of surgery. Of the cases in which it is mostly resorted to, incarcerated hernia is one. Nauseants have, under these circumstances, been advantageously used in this city, and, by a surgeon of England, it appears, that they are not less so, in the reduction of luxated limbs, by overcoming muscular resistance. To dislodge substances firmly fixed in the œsophagus, the same practice has been pursued, I understand, by Dr. Physick, and with great success.

Nor has the remedy been neglected by the practitioners of midwifery. It was at one period much prescribed by them, in order to induce relaxation in obstinate parturition, dependant on rigidity of the soft passages. Exceedingly plausible in theory, it, however, totally failed when reduced to practice. I have tried it, and have seen the experiment made by others. The effect was, a very great degree of relaxation and distress, without at all facilitating the dilatation of the parts, or in any manner promoting labour, and hence the practice has been pretty generally abandoned.

With the same view, vomiting was once directed in tetanus. Whether with any advantage, as ordinarily induced, does not clearly appear.

Lastly, emetics have lately acquired some repute, as correctives of the inordinate effects of mercury—and, contradictory as it may seem, in creating susceptibility to its action. But more of this when I come to the history of that article.

In looking back on what has been said on the use of emetics, we cannot help being struck with their great value, as means of combating disease, and at their wide and diversified application in the practice of our profession. Exceedingly disagreeable in their operation, they have, by a false refinement, been permitted to be laid aside, or superseded by other remedies, or modes of treatment, which, in my opinion, are less efficacious. To the complaints of children, emetics are especially adapted, and, since the effort of

vomiting in early life is productive comparatively of little distress, fewer objections can here be alleged to this class of medicines.

Extensively beneficial as they are, we have, however, cases in which they must be resorted to with great circumspection, and some, where they are even inadmissible. The danger of prescribing them, under circumstances of plethora with cerebral tendencies, I have already indicated. Equally are they prohibited in all high degrees of visceral inflammation, and more particularly in that of the alimentary canal. To these cases may be added, an extremely debilitated system from any cause, and, finally, the advanced state of pregnancy, or where a prolapsus uteri, or hernia exists.*

* Dr. Sutton of England has recently published a paper to show, that where we wish to limit the operation of emetics to the stomach, and prevent their action on the bowels, we should add five or six drops of laudanum to the emetic mixture, which in his practice has answered well.

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SECTION V.

PARTICULAR EMETICS.

Callicocca Ipecacuanha.

THOUGH ipecacuanha has long been employed in practice, it was only ascertained lately to what genus of plants it belongs. It is now said to be afforded by a pentandrous plant, the cephalis emetica of some, and the callicocca ipecacuanha of other botanists. It is a native of the Brazils.

Of the root, the only part of the plant used, there are several varieties imported, of which the ash-coloured is the best.

Good ipecacuanha is the mildest, and one of the most certain, of the emetics. It evacuates the stomach, without exciting violent vomiting, or exhausting the system. Much has been said respecting the

proper dose of this medicine. The first volume of the Medical Inquiries and Observations, contains a paper by Dr. Pye, in which it is shown, that in a large number of cases, vomiting was effectually induced by from two to four grains of it. It is probable, that the article was more active, owing to its genuineness, than that now usually found in the shops, which I have reason to suspect is mostly adulterated. Cullen states, as a general rule, that "to excite vomiting, and especially repeated vomitings, we cannot depend on a dose under ten grains, and frequently a larger dose is required." But it seems to me, that even this quantity is too small for the purposes assigned. As an average dose for an adult, a scruple is little enough. Deeming it expedient to give activity to ipecacuanha, I combine with it a grain or more of tartarized antimony, which constitutes, for many purposes, the most valuable of our emetic preparations.

Distinct from its emetic property, ipecacuanha has been recommended as having peculiar powers in fevers. But on trial it was found, in the general estimation of practitioners, inferior to the antimonial preparations, and is now not much employed. If it retain any share of confidence, I am inclined to believe it is in intermittent fever, a case in which, at least at one time, it was supposed to evince something approaching to a specific. Cullen says, that he knew a respectable practitioner who broke the paroxysms of this disease by administering ipecacuanha at the accession

or end of the cold stage. But here I would ascribe nothing to its peculiar properties, having done as much with other emetics, and especially the tartarized antimony, which, indeed, I prefer.

Ipecacuanha is an exceedingly important article in hæmorrhage. Many physicians of respectability bear testimony to its good effects in hæmoptysis, though it is in uterine hæmorrhage that it displays its best powers. In these cases, I really think it is quite equal to the saccharum saturni, and, sometimes, superior to that useful article.

By what precise mode of action it causes such an effect, is a point on which there is no concurrence of sentiment. It cannot be by its astringency, as some have alleged, since the most powerful astringents will not do it, and, besides, ipecacuanha does not appear to possess this property in any great degree.—Murray* contends, that it is to be referred to its antispasmodic qualities, and the same hypothesis has been adopted by some subsequent writers. But, admitting that it is antispasmodic, there are other medicines decidedly more active in this respect, which produce no such effect. Neither of these explanations is, therefore, satisfactory. May it not operate simply by inducing relaxation, thereby diminishing arterial action, which so uniformly has a tendency to suppress effusions of blood? Yet to this hypothesis there are also obvious objections. The common mode of ad-

* Apparatus Medicaminum.

ministering it in hæmorrhage, is, to combine one or two grains of it with half a grain or less of opium, to be repeated at stated intervals.

Next to its use in these cases, it is, perhaps, most celebrated in the several affections of the alimentary canal, and particularly dysentery. The stomach and bowels having been evacuated sufficiently, it is given very much in the same way as in hæmorrhage. By some practitioners it is thought to be better suited to the disease with discharges of blood, amounting nearly to hæmorrhage of the bowels. But, in every form of dysentery, it is useful, when the pain is great, and the desire to stool frequent and ineffectual. Its efficacy in this disease does not rest on my own authority. It has been employed for the last half century, by the most celebrated practitioners, in every quarter of the world. Of its *modus operandi* here, we know as little as in other cases. We can hardly suppose, with Cullen and Sir George Baker, that it acts as a purgative, because other purgatives have not the same effect, and since it does as much good when there is no evacuant operation. By Mosely it is considered advantageous, by relaxing the surface, and exciting diaphoresis. Whether this explanation be just or not, it is more plausible than the other, and comports better with the obvious qualities of the medicine, and its known effects.

Two other modes of administering ipecacuanha in dysentery have been adopted. It is proposed, in the shape of a clyster, three drachms of the bruised root,

boiled in a quart of water down to a pint, to be repeated twice or thrice in the twenty four hours.* Of this I know nothing myself, though, other objections aside, we have always been taught to believe, that a decoction of the article is wholly inert. Much more confidence ought probably to be reposed in the second of these prescriptions. Defeated in his attempts to cure dysentery by the ordinary manner, Mr. Playfair,† a surgeon at Bengal, has used it with advantage, in the dose of from a half to a full drachm, combined with from thirty to sixty drops of laudanum, confining the patient, for some hours afterwards, to a horizontal posture. The first dose being rejected, the mixture is to be repeated, and is commonly retained. This practice, though represented as exceedingly efficacious, is confessed to be only adapted to the very commencement of an attack, since, if the disease be at all advanced, the stomach becomes so irritable as to reject the medicine at once. By Mr. English, another surgeon on the British establishment, the success of the remedy is corroborated.‡

Diarrhoea is also sometimes treated by ipecacuanha. The case to which it is supposed to be adapted, is well described by a writer, on whose authority, I apprehend, it was originally introduced. “We meet,” says he, “with persons of both sexes, and different ages, who,

* Clark on the Nature and Cure of the Dysentery of the East and West Indies.

† Edinburgh Med. and Surg. Journal, Vol. X.

‡ Ibid.

from a variety of causes, have long been subject to habitual diarrhoeas, sometimes accompanied with sickness, bitter taste, furred tongue, and some degree of fever—and, sometimes, without these symptoms, yet both liable to frequent discharges, often in the morning, sometimes in the night, and generally after taking any quantity of aliment, whether liquid or solid.” Two or three grains of ipecacuanha in the morning, and an anodyne in the evening, to be repeated for some days, are represented as having succeeded in a number of cases, which had “obstinately withstood the efficacy of very opposite remedies.”*

In dyspepsia, it has been highly extolled by Daubenton, in his tract on the subject, in such small doses as not to excite nausea, acting as an alterative—imperceptibly changing the state of the stomach, till finally it restores the organ to its natural tone and healthy actions. In some of these cases, I have certainly experienced a tonic effect from it, and we are told by Dr. James, a most respectable physician of Albany, that a pill of one or two grains, taken soon after dining, generally obviates the gastric oppression, incident to the disease.†

* Fothergill's Works, Vol. III.

† Vid. his Paper on Dyspepsia, in the Phil. Med. Journal, vol. ix. Whenever given in this disease, the pill should be previously well dried, as, in this process, ipecacuanha loses its nauseating effect, without impairing its valuable properties.

Ipecacuanha has claims to notice in asthma.* As far as I know, its use, in this case, originated with Akenside, the poet and physician. There is, at least, an excellent paper by him, in the Transactions of the London College of Physicians, on this subject. During the paroxysm, he gave a scruple of it, to afford immediate relief, and, in the intervals, from three to five grains every morning, to excite nausea, with a view to a permanent cure. Whether it produces vomiting or not, he says, it is equally useful.

In minute doses, sometimes alone, though oftener united with calomel and opium, it is much prescribed in the advanced stage of pleurisy and peripneumony—in ordinary catarrh, and other pectoral affections simulating consumption.

The virtues of *ipecacuanha* may be extracted by several menstrua, though wine is the one chiefly employed, and by which the *vinum ipecacuanhæ* of the Dispensatories is formed. This is a neat preparation, and is sometimes substituted for the powder. It is well

* It is somewhat curious, that, though *ipecacuanha* is so efficacious in asthma, the odour which is emitted from the powder, will produce, in some persons, a short and difficult respiration, approaching almost to a paroxysm of this disease. I have witnessed this in one case myself, have heard of another, and a still more extraordinary one is recorded in the Philosophical Transactions, Vol. lxvi. part I.

sued to children. As an emetic, the dose of the wine for an adult is an ounce.*††

SPIRÆA TRIFOLIATA.

This is an indigenous plant, which grows plentifully in various parts of the United States, and is well known by the title of *Indian physic*. Like ipecacuanha, to which it has been compared in more respects than one, the root is the only portion employed, though the stem and leaves are not destitute of activity. The bark, much more than the wood, of the root, has the emetic virtue.

With this medicine, I have no great experience. Many country practitioners, however, place so much confidence in it, that it has nearly superseded the ipecacuanha in their hands. It may, in common with that medicine, be applied to other purposes, though I have not heard of its having hitherto been done, except in the case of intermittent fever. I

* Vid. Diaphoretics and Expectorants.

† *Incompatible Substances*.—All the vegetable acids, and especially vinegar: also the vegetable astringents, as an infusion of galls, &c. By decoction, its active properties are destroyed. They are, moreover, lost by keeping the ipecacuanha in powder, and more speedily, if it be exposed to the air and light.

‡ By M. Majendie and Pelletier, a new proximate principle in the root of this plant has been lately detected. It is called *Emetin*, and, in the dose of half a grain, pukes copiously, and displays the other qualities of the crude ipecacuanha.

should be glad to see the plant further investigated, and more variously employed. It is given in the dose of thirty grains. The western states afford a species of this plant, which is said to be, in every respect, superior to the one I have described. But of this I know nothing.*†

EUPHORBIA IPECACUANHA.

With the remedial powers of this plant, a species of spurge, which is a native of our country, growing chiefly in the middle and southern states, I have no experience. But, it is said, on good authority, to be a certain and active emetic. On further and more careful examination, should this statement be verified, the article will prove an important addition to the *materia medica*. The root, in powder, is only used, in the dose of five or ten grains.

* By the present professor of botany in our University, we are told, that neither of these plants is a *spiræa*, but that they both belong to the genus *Gallenia*. To the first, he gives the name of *Gallenia trifoliata*, and calls the second *Gallenia stipulacea*.—Vegetable Mat. Med. of the U. States, by *W. P. C. Barton, M. D.*

† Experiments recently made by Dr. Baum, on an extensive scale, go to the utter denial of any emetic property in this plant.

Vid. the Philadelphia Medical Journal, Vol. V.

SANGUINARIA CANADENSIS.

This is also an indigenous plant of the United States, having the provincial titles of paccoon, blood root, &c. Though it has been much the subject of investigation, its predominant quality is so little ascertained, that it is represented as an acrid narcotic, or tonic, closely resembling the Peruvian bark, an expectorant, an escharotic, and as an active emetic. The late professor Barton chose to consider it chiefly in the last relation, and I shall follow his example. Never having seen it used, I must have recourse to the reports of others for all I shall say respecting it.

In a large dose it produces nausea, with a painful heated sensation in the stomach, some vertigo, and depraved vision, nervous tremors, a disposition to syncope, and finally vomiting. Exhibited moderately, it sickens, like the digitalis or tobacco, reducing vascular action, and promoting expectoration, and, in so small a quantity as not to nauseate, proves stimulant and tonic. Thus variously operating, it has been applied, as might be supposed, to diverse purposes.

As an emetic, its harshness precludes its general employment. But its claims to attention would seem to be stronger in the pectoral affections, as peripneumonia notha, pertussis, chronic catarrh, and hydrothorax. It has also been recommended in protracted

rheumatism, and still more so in intermittent fever, where it is probably serviceable, as cinchonin* enters into its composition.

All its virtues are resident in the root, of the powder of which, the dose is from one to ten grains, according to the indication to be met.

NICOTIANA TABACUM.

The tobacco is not commonly placed in the class of emetics. I do not know that I am right in doing so. Though, undoubtedly, a very active emetic, it has other properties, which give it as strong a claim to a different location in the materia medica. Not to mention its minor qualities, it is a narcotic, a diuretic, and a purgative.

The history of this plant is interesting. The production of a little spot, the island of Tobago, it has engaged the attention of the sordid, and enchanted the witty and the wise. Every where its powers are felt, and its fascinations acknowledged. The Arab cultivates it in his burning deserts. The Laplander risks his life to procure it, amidst his snows. No privation is too severe to the seaman or the soldier, while he commands this luxury. Even polished man, with all the comforts of elegant society, cannot dispense with his cigar.

* Bird's Inaugural Thesis.

Nicotiana is so called, from M. Nicot, by whom the plant was originally carried into France, and *tabacum*, from the island in which it was first discovered. But, previously to its introduction by Nicot, it had been brought to England, by Sir Francis Drake, and rendered an article of fashionable use, by the influence of Sir Walter Raleigh, notwithstanding the solemn denunciations against it by James I., and the ready submission of many of his court to this proscription. Evidently a narcotic, from this proceed all its charms. Like opium, it calms the agitations of our corporeal frame, and soothes the anxieties and distresses of the mind.

Considered in a medical view, its property, as an emetic, now first attracts our attention. By Cullen, and some other writers, its use is opposed, on account of the harshness of its operation. Certainly it exceeds all others, in the promptness, violence, and permanency of its impressions. But these very qualities, unpleasant as they are, enhance its value in many cases. Tobacco seems, especially, to be adapted to the evacuation of some poisons, and may be exhibited, either internally, or applied as a cataplasm to the epigastric region. It is recorded by the late Professor Barton, that he resorted to such an application of the moistened leaves with complete effect, to expel an inordinate quantity of laudanum, in a case where the active emetics, in the largest dose, would not operate, from extreme torpor of the stomach. Many instances, and particularly of the corrosive poisons,

are attended, however, with so much exhaustion of strength, that it would seem perilous to recur to tobacco, lest, from its own effects the powers of vitality might be still further prostrated, or, perhaps, irrecoverably extinguished.

Yet, in small doses, it does appear, that it may be prescribed safely, and even with advantage. By a writer of respectability, we are told, that while at the Cape of Good-Hope, he had a number of Hottentots under his care, with intermittent fever. Being deficient in medicines, he resorted to this article, and found six grains of snuff as effectual in exciting vomiting, as two grains of tartarized antimony. Nevertheless, the tobacco is preferred in minute doses, with a view to its nauseating effects. Thus administered, I have seen it exceedingly serviceable, in subduing the turbulence of some of the more furious shapes of mania, and, where it cannot be given, as often happens under such circumstances, a poultice of it, externally applied, will answer nearly as well.

As a diuretic it has also some reputation, and is still more employed as an enema in incarcerated hernia, and obstinate constipation of the bowels.* Deducing his practice from the same principle, Mr. Earle, a distinguished surgeon, has recently treated several of the worst cases of retention of urine, with signal success, by this remedy, and has added some confirmation to the fact, of which we were already

* Vide Enemata.

apprised, that it might be beneficially employed in tetanus, and the kindred spasmodic affections.*

As an unguent or lotion, tobacco is much employed, in the popular practice of this country, to cleanse foul ulcers, to remove tinea capitis, and similar affections—and in the shape of cataplasm, as a discutient of indolent tumours.††

LOBELIA INFLATA.

Of this, one of the native plants of our country, I know little as a medicine. It is reputed, however, to be actively emetic, producing “great relaxation, debility, and perspiration,” and is apt also to purge. I suspect it to be harsh in its operation, and, certainly, when chewed, very much affects the nervous system by tremors, giddiness, &c. and hence the popular title of *Indian Tobacco*. It has more reputation in asthma, and is said to be a useful “pectoral in con-

* Med. Chirurgical Transactions, Vol. VI.

† Vid. Diuretics and Enemata.

‡ In tobabacco there seems to be two active principles—*Nicotin*, lately discovered, and an essential oil, each of which is exceedingly deleterious—the first, it is said, operating directly on the brain, and the second on the heart.

sumptive and other coughs, depending on mucus accumulated in the bronchial vessels.?"

Every part of the plant is active, though the roots and inflated capsules are most so. It may be given in powder or saturated tincture. As an emetic, the dose of the former is about a scruple, of the latter a drachm—and, as an expectorant, much less.

SCILLA MARITIMA.

Of the squill, I have little to say, under the head of emetics. Two species of the plant are used in medicine, the red and white, which grow on the shores of the Peninsula of Europe, along the Levant, and the Barbary states. As an emetic, the squill is now nearly supplanted by articles of more value. Yet, in the dried state, eight or ten grains of it will produce vomiting, with tolerable certainty. The recent squill is not so active, even as twenty to four, owing to its containing a considerable portion of inert juice, which escapes in the process of exsiccation. Different menstrua are employed to extract the virtues of this article—and we have three officinal preparations of it, the vinegar, the oxymel, and syrup—each of which is nearly of the same strength, and will puke in the dose of an ounce. No one of these, however, is, at present, resorted to for this purpose, except to relieve the pulmonary system, when oppressed with

phlegm, mucus, &c. and here there is scarcely a preference.* The virtues of the plant reside in the root, which is bulbous.

ANTIMONIUM.

This is a peculiar metal, naturally combined with sulphur, and, in this impure state, is collected out of the mines of several of the countries of Europe, and has lately been found in the United States.

The origin of the term antimony is somewhat curious. It is related, that Basil Valentine, a German monk, much addicted to experimental inquiries, gave the crude antimony to some hogs, which it speedily fattened. Encouraged by analogy, he also, with the same view, administered it clandestinely to his brethren of the cloister, all of whom, however, died, and, from the circumstance of its proving so deleterious in this case, it acquired the appellation of *ante-moine*, and ultimately, by corruption, antimony.

Like most active medicines, this urged its way into the practice of physic with great difficulty. After violent contentions with many of the medical men of the age in which he lived, Basil Valentine succeeded in establishing its credit as an internal remedy. Elated by success, he published a work exhibiting its properties, and his vanity, which, in the plenitude of ex-

* Vid. Diuretics and Expectorants.

ultation, he entitled "*Currus triumphalis Antimonii*." Nevertheless, the medicine soon relapsed into disrepute, and was once more brought into notice by the strenuous efforts of the wild and eccentric Paracelsus.

During the angry controversies, so long carried on between the disciples of the Galenical and Chemical schools, relative to the employment of those active preparations, which the latter derived from the processes of their art, antimony was rejected or received, just as one or the other party acquired an ascendancy. It was at this period, that a solemn act passed the parliament of Paris, prohibiting, under the severest penalties, the use of this medicine in any part of the French dominions. Notwithstanding this, it continued to be occasionally prescribed in other sections of Europe, with a variable and disputed reputation, till at last its efficacy was sanctioned by the approbation of Hoffman, and fully confirmed by the authority of Cullen and Fordyce.

Nearly inert in its native condition, antimony, however, by its multiplied combinations, supplies us with a profusion of active remedies. To notice these in detail, or even to enumerate them, would be a most irksome and unprofitable employment. It fortunately happens, that the antimonial preparations, though of somewhat different qualities, are characterised by considerable uniformity in their mode of action, and general medicinal properties. As an emetic, the following preparation only claims attention.

ANTIMONIUM TARTARIZATUM:

VEL

Tartris Antimonii.

Doubts are entertained as to the precise chemical composition of this article. It is generally supposed to be a triple salt, consisting of tartaric acid, oxid of antimony, and potash—and hence should be termed a *tartrate of antimony and potash*. But in the accuracy of these views the chemists do not coincide.

Nearly insipid, without colour, inodorous, and very minute in the dose, it may sometimes be given with convenience, in cases where it would be difficult, if not impossible, to get down any other medicine. While it has this superiority over its kindred preparations, it possesses, in an eminent degree, all the properties common to the class.

As an emetic, it is distinguished by the certainty, extent, and permanency of its operation. The impression which it makes on the stomach is more forcible, and continues longer than from most other emetics, and hence it produces a more thorough evacuation, and occasions, in a greater extent, all the effects of active vomiting.

Wishing, therefore, such an effect, it should be selected for the purpose. Exhibited in a large dose, or in small ones repeated, it will puke, and also purge, copiously, in some instances. Besides these two leading and primary effects, it not unfrequently proves diuretic, expectorant, and diaphoretic.

To vomit effectually, the dose of it is from two to five grains, and, to promote the operation, some tepid drink should be freely drunk. But, in ordinary cases, it is customary to dissolve five or six grains of it in double the number of table spoonfuls of warm water, and direct one every ten or fifteen minutes, till the end is attained.

Dissolved in wine, emetic tartar is a preparation much used. It is the *vinum tartratis antimonii* of the dispensatories. As formerly made, it was objectionable, from the uncertainty of its strength.—Employing the glass of antimony, which is soluble in the tartaric acid, the power of the medicine very much depended on the degree of acidity of the menstruum. The extemporaneous solution in water is a more certain, and a better preparation. But the antimonial wine is, perhaps, too strongly fixed, at least in popular confidence, readily to be excluded. It ought to be recollected, that, when prepared according to the *Edinburgh Pharmacopœia*, one ounce of it contains two grains of emetic tartar, and is a dose for an adult, while that of the *London College* is of double the strength.

To the cases of children, antimonial wine is habitually appropriated, and sometimes prescribed at a very early period of life. I have given it to an infant at birth, to relieve difficult respiration, in consequence of an accumulation of phlegm. The dose, under such circumstances, should not exceed one or two drops. It is, however, more common to resort to it in cases of children a little more advanced. At any period within the year, provided they have attained the age of three or four months, the dose, for the purpose of vomiting, is five or ten drops, according to the urgency of the case, to be repeated at short intervals, till the effect is produced. In croup, the quantity should be much larger, as there is here a very great insensibility, as has before been mentioned, to the operation of emetics.

I should now proceed to point out, in detail, the application of tartarised antimony to the cure of diseases, had I not already anticipated much of what I might otherwise have said, under the general head of emetics, and when treating of ipecacuanha.

Considering it as justly representing all the antimonial preparations, I shall confine my remarks at present to it.*

This medicine has been chiefly celebrated in the cure of febrile affections. It is given in the commencement of almost every description of them, to

* Cullen and Fordyce are of opinion, in which most practitioners now concur, that the emetic tartar, on the whole, is to be preferred to all the other antimonial preparations.

evacuate the alimentary canal, by its united emetic and purgative properties, and, in the subsequent stages, in minute doses, to moderate arterial action, and to excite and keep up perspiration.

To Cullen, the praise has generally been conceded, of having indicated, more particularly than had previously been done, the great value of antimonials in the management of fevers. Being ushered into notice under the auspices of his distinguished name, the practice soon attracted attention, and was adopted, wherever his influence extended.

Of the precise manner in which emetic tartar operates, in these cases, or with the principle that should guide its use, we are not sufficiently acquainted. Cullen maintains, that it produces no advantage unless it vomits, or creates considerable nausea. It is, on the contrary, asserted by Fordyce, than whom there cannot be higher authority, that by exciting vomiting, much of its power is impaired, and that it is most efficacious, when there is the slightest gastric disorder. Nearly the same views have been more recently advanced by Balfour and Lanthois, who contend for its *direct sedative* influence.

To this point, I have directed a very careful attention, and am led, independently of all authority, to concur in the opinion of Fordyce. Nausea, by whatever means induced, is not, in itself, a salutary effort, nor does it ever dispose fever to a crisis, or favourable solution. During its continuance, arterial action, muscular power, and animal temperature are un-

doubtedly lowered, though, the moment it ceases, there is uniformly, at least in the febrile affections, a re-action of the system, and a correspondent exacerbation of the disease. Did the sickened state of the stomach operate in the beneficial way contended for, then the utility of the medicine would be proportioned to the effect thus created, and a variety of other nauseants, much more powerful and lasting in their impressions, as the digitalis, tobacco, and squill, ought to be preferred. But this is contradicted by experience, and the united voice of practitioners is against their use, under such circumstances.

Medicines seem to do good in the cure of fever, by exciting their own specific or peculiar action. When they disorder the stomach by sickness, they depart from this, and, if they do not act as poisons, always become nugatory, or more or less mischievous. To illustrate this position, by particular examples, would be easy in an inquiry more detailed than I can now indulge, and I am sensible, too, that they cannot be required by any one who has, or will devote his mind to this subject. Many, indeed, of the febrifuge preparations, are among the most pleasant of our medicines, such, particularly, as the effervescent draught, and the neutral mixture, the primary effect of which is, to remove nausea, or to sustain the tone and tranquillity of the stomach.

But, while I contend, that emetic tartar, like mercury, lead, arsenic, bark, &c. operates by virtue of a peculiar power, I wish it to be understood, that I

conceive, as in the instance of the articles just enumerated, that its efficacy in the reduction of fever, will always be proportionate to the quantity taken, provided it exercise its genuine mode of action, which, as before affirmed, is incompatible with any nauseating effect. Curious as these views of the *modus operandi* of this medicine may be in speculation, they become incomparably more interesting when applied to practice. Be it admitted, that they are correct, and we have obviated at once, all the prejudices and objections against the use of a remedy, confessedly of the highest utility. Nevertheless, it is not to be inferred, that any part of the preceding remarks is applicable to emetics, in the several stages of fever. These operate entirely on a different principle, and their efficacy, when thus employed, is too well attested to be shaken or disturbed.*

Besides the more purely febrile affections, emetic tartar is prescribed in various diseases, and especially in the phlegmasiæ. Bleeding, and other direct evacuations, having been premised to a certain extent, small doses of it are recurred to with great advantage. Even without blood-letting, it is stated by Arnaud, that he cured a great number of cases of pleurisy and peripneumony, and its success in the same diseases, as well as in hydrocephalus, is confirmed by Laennec.

* Fordyce's Third Dissertation on Fever.

In an equal number of cases of peripneumony, of equal intensity, comparative experiments, made by Laennec, with it and bleeding, either local or general, resulted in favour of its superior efficacy. Granting its utility in these cases, which, I think, must unhesitatingly be done, such statements are still incredible, from exaggeration, and should be discountenanced. There is not even a *substitute* for venesection in the active stage of inflammation.*

Nor was less confidence reposed in this medicine, at one period, in active hæmorrhages. No doubt, from the respectable testimony we have in its favour, it was useful. I have sometimes directed it, in conjunction with nitre, in febrile hæmorrhages, and found it highly serviceable. It is suited to all cases of this description, though more particularly to hæmoptysis. Yet, it must not be supposed, that I mean, by the preceding remarks, to derogate from the value of ipecacuanha, or the sugar of lead, in hæmorrhage. My design is not to institute even a comparison between the three remedies. Each one has its own appropriate cases, which a skilful practitioner will always discriminate and select.

* The writers whom I have cited differ materially as to the dose of tartar emetic. While some of them, as Lanthois particularly, exhibit it in very minute quantities, as a grain to eight, ten, or twelve pints of water, to be used as a drink—there are others, as Laennec, who give twelve or more grains of the article a day. It is true, that the prescription of the former is intended for chronic, and that of the latter for acute pneumonia, &c.

Notwithstanding all that has been said of the utility of this medicine in dysentery, I think that it is inferior to ipecacuanha. It is stated, however, by Sir George Baker, that the result of an extensive experience with both articles, in that disease, was entirely on the side of antimony. To the same point we have also the authority of Sir John Pringle, though not so strongly expressed.* The deliberate opinion of such men, on a practical matter, is always entitled to great weight and consideration. Yet, I believe they were deceived, or, at least, my observations and reflections have led me to an opposite conclusion. Emetic tartar, in dysentery, is administered on the same principle, and under similar circumstances of the disease, as ipecacuanha. Competent evacuations having preceded, it is then introduced in minute doses, so as to affect the stomach, and, through this medium, to relax the extreme vessels.

Emetic tartar is a common remedy in some of the exanthematous affections. No practice, indeed, is more general than that of giving it in small doses in the eruptive fever, especially of small pox, where it has or threatens to become high and inflammatory. In a different mode, it is also prescribed to meet some other indications. When, for instance, the eruption is retarded, and, as a constant effect, the system greatly depressed by gastric uneasiness, vomit-

* It was, however, the cerated glass of antimony which Pringle employed.

ing by it, more than by any other article, relieves the stomach, restores its energies, and promotes the eruption.

Without, perhaps, our having any distinct conception of its *modus operandi*, it is much resorted to, in the cure of chronic diseases of the skin, and other superficial affections, as some of those proceeding from venereal contamination. Even confirmed lepra has, probably, been as successfully managed by it, as by any other treatment. It is given in minute doses, either alone, or in combination with the mercurials and other articles, having a more direct affinity with the surface of the body. To produce any decisive advantage in these cases, it must be very perseveringly continued.*

To create extreme relaxation by emetic substances, I have already remarked, is one of the expedients of surgery. The most distinguished application of this practice is to the reduction of dislocated limbs, where the operation proves difficult, from muscular resistance. By Mr. Wilmer, an English surgeon, several instances, derived from his own experience, or that of other practitioners, are adduced in confirmation of its efficacy. He recommends, that a very large dose of tartar emetic be exhibited, so as to produce an exhaustion of muscular power, and, during this state, to make the attempt at reduction. He closes his paper on the subject, with some remarks on its su-

* Willan on Diseases of the Skin.

perior efficacy over bleeding, purging, baths, fomentations, and the other means hitherto employed. He maintains, that his plan is not only more certain; but that no mischievous effects ever result from it.* Yet, I am inclined to believe, that the best remedy, in these cases, is venesection *ad deliquium animi*, as practised, with such prompt and decisive results, by professor Physick.

As an enema, emetic tartar has proved, in my hands, a most powerful remedy, and one which promises hereafter to be of very diversified and extensive application. The first case in which I employed it, was to evacuate the stomach, to remove poison which had been swallowed. Having unavailingly tried a series of the most active emetics, I directed, that half a drachm of it, dissolved in a little water, should be thrown up the rectum, and, as I anticipated, a violent cholera morbus ensued, evacuating the entire alimentary canal, so much so, indeed, that the food, undigested, came by stool. I have since had frequent occasion to resort to the same means, though chiefly in cases of obstinately obstructed bowels.

The ordinary prescription for this purpose, is a solution of a scruple of the medicine, which not proving sufficient, the same, or an increased quantity, may be repeated in twenty or thirty minutes. Even in the dose of a drachm, I have used it. Where the effect is full and complete, an extraordinary degree of mus-

* Eclectic Repertory, Vol. III.

cular debility takes place, without, however, producing, so far as I have observed, any permanent mischief.

Bearing in mind the uncommon relaxation thus induced, I had resolved to make a new application of it to the cure of tetanic, and other spasmodic affections, which I have since done, and with such success, in a case of locked-jaw, that I cannot forbear to indulge the hope, that, under this treatment, the disease may hereafter be divested of some portion of its terrors and mortality. I will not, on so narrow an experience as a solitary instance affords, venture to predict, that such will be the result. Enough, however, has been done, to inspire confidence in the remedy, and to induce us, on future occasions, to give it a fair and decisive trial. To the adoption of this course, we are, moreover, encouraged, by the success of a similar mode of treatment in tetanus by the tobacco injection. Nevertheless, we are to recollect how diversified is the nature of this disease, and that no rational expectation can be entertained, of all its forms submitting to any one remedy, or system of practice. Of the above case, all I could learn of the cause from the patient was, that the nerve of one of his teeth was very much exposed, and that, by touching it, he had often the most acute pain, with convulsive twitches of the muscles of the face. But, whether the attack was brought on by this sort of irritation, or by lying out in the cold, could not be determined. By the man himself, it was ascribed to the former

cause, though, I confess, my opinion was otherwise, as it appeared analogous to those cases excited by sleeping in a chilly and moist atmosphere.*†‡

SULPHAS CUPRI :

VULGO

CUPRUM VITRIOLATUM.

There are several of the preparations of copper powerfully emetic. The only one, however, which is retained in practice, is the blue vitriol, or sulphate of copper. By Cullen it never was employed as an emetic, but he supposes that it is well calculated to excite nausea, and that, in this way, it sometimes promotes the urinary discharge.

Though much was, at one time, said, of the utility of this medicine in pulmonary consumption, I am not aware, that it has any property which entitles it to a preference in such cases. The only ground of superiority claimed for it, is, that it is more local in its

* *Incompatible Substances*—Mineral acids, alkalies, and their carbonates—earths, soaps, hydrosulphurets, and the astringent vegetable infusions. The latter, indeed, so completely decomposes the emetic tartar, that they are found to be antidotes to that article, and, of them, an infusion of the Peruvian bark answers best.—ORFILA'S *Toxicology*.

† Norris's Drops are a spirituous solution of tartarized antimony.

‡ Vid. Diaphoretics and Epispastics.

operation, and hence does not produce the general relaxation of other emetics, and especially the antimonial preparations. It is alleged, that it is really little more than a mere evacuant of the stomach, which, if true, I should presume it not to be so appropriate to consumption—it having been pretty clearly shown, that emetics are serviceable in these cases, in proportion to their wide and pervading influence. Yet the practice is not wholly without authority. Commenced by Maryatt,* it has since received the approbation of Simmonst† and Thomas of England,‡ and Senter§ of our own country, as well, perhaps, as other practitioners, who have withheld their experience from the public. This practice consists in puking two or three times a week, with this article, which is held to be applicable both to the incipient and suppurative stages of phthisis.

Lately, the blue vitriol has been strenuously recommended, in this country as an emetic, in cyanche trachealis, as very certain in its operation. But I doubt the accuracy of this report, and, at all events, I can discern no good reason, on such slender evidence, for adopting it, to the exclusion

* Therapeutics, or the Art of Healing.

† Practical Observations on the Treatment of Consumption.

‡ Modern Practice.

§ Transactions of the Philadelphia College of Physicians, Vol. I.

of others of tried efficacy. The dose is from three to five grains.*†‡

SUB SULPHAS HYDRARGYRI FLAVUS:

VULGO

HYDRARGYRUS VITRIOLATUS.

Most of the preparations of mercury occasionally produce vomiting. This often happens with calomel. But as an emetic, the turpeth mineral, or sub-sulphate of mercury, is the only one generally used.

It is distinguished principally by the promptness of its operation. In the dose of six or eight grains, it hardly enters the stomach, before vomiting commences. It would, on this account, seem to be fitted for the expulsion of poisons, and, indeed, to all cases where a speedy operation is demanded. But there is a two-fold objection to its general introduction into

* Combined with an equal portion of the tartarized antimony, it constitutes the dry vomit of Maryatt above alluded to, so called from its being exhibited without drink.

† *Incompatible Substances.* Alkalies and their carbonates—sub-borate of soda—acetate of ammonia—tartrate of potassa—muriate of lime—nitrate of silver—acetate and superacetate of lead—oxymuriate of mercury—the preparations of iron—and all astringent vegetable infusions or tinctures.

‡ Vid. Tonics.

practice. It operates with violence, and is apt to induce salivation.

Either alone, or in union with squills, it is alleged, however, by some writers, to be serviceable in the putrid sore throat, and in some forms of dropsy. Of this I am not prepared to speak from any personal experience. Emetics, are, unquestionably, sometimes beneficially prescribed in each of these diseases—and the turpeth mineral, as one of them, may be productive of the same effect. The highest reputation, however, which it has attained, is, in the dispersion of the venereal swellings of the testicle.

ZINCI SULPHAS :

VULGO

VITRIOLUM ALBUM.

The operation of this emetic is said to be exceedingly expeditious and complete, and, hence, it has been appropriated to the evacuation of poisons.

Cullen, who is not friendly to any of the mineral emetics, except the tartarised antimony, does not approve of the white vitriol, even in the particular case before us. To render its effects certain, says he,

the dose must be large, and, if this is not soon thrown out, it is apt to continue a disagreeable nausea, or even vomiting, longer than is necessary.—But other practitioners, of reputation, give an opposite account of it. Thus it is stated by Mosely, whose experience was ample with it, perhaps more so than that of any other person, that “the white vitriol, besides being in all respects safe and innocent, has advantages over every other nauseating or emetic article. These are, that the patient is not harassed with its operation—for that is never violent, as antimonials sometimes are, and is, generally, instantaneous, and as suddenly over, always leaving the stomach strongly invigorated. Neither does it cause spasms in the viscera, nor any nervous affections, mischiefs often produced by the antimonials.”*

Consulting the results of my own experience, I should say, that the language of this writer is somewhat extravagant, and seems to be dictated by extreme partiality to the medicine, which the whole tenor of his observations conspicuously evinces. Yet, I would concede to him, that Cullen, in his description of its effects, has run into the opposite extreme—and that, so far as I am competent to judge, it is, as an emetic, safe, and sometimes efficacious, as in asthma and other spasmodic affections—though I confess, that it has uniformly disappointed me, as an *evacuant of poisons*, to whatever extent exhibited.

* Mosely on Tropical Diseases.

The dose, in ordinary cases, is about ten grains—which, however, in certain emergencies, may be increased to a drachm, or more.*†

* *Incompatible substances*—The alkalies—earths—hydro-sulphurets—the astringent vegetable infusions, and milk.

† Vid. Tonics.

SECTION VI.

Cathartica, or Cathartics.

THESE are medicines, which, by quickening the peristaltic motion, promote the evacuation of the intestines, or induce purging. The intimate connection existing between the whole of the alimentary canal, and other portions of the complicated structure of the animal machine, gives to them an extensive influence; and renders them among the most important means in the practice of our profession.

Cathartics differ very materially in their degree of activity, some operating mildly, while others are more violent in their effects. The former have been usually distinguished by the title of *laxatives*, and the latter by that of *purgatives*—the harshest of which are called *drastic* purgatives.

Nor is this the only difference observable in this class of medicines. Most cathartics act through the entire extent of the bowels, while some few seem to be restricted either to the upper or lower extremity of

tube only. There is a section which operates speedily—and another, tardily and sluggishly. We have some, which produce nausea, tormina, and tenesmus—and others, that, however copiously they purge, cause no such uneasiness. They vary also, in the nature of the matter which they evacuate. Thus, while one set removes little else than the fæcal contents, a second produces large watery discharges, and a third empties the whole primæ viæ, with a mixture of bilious, mucous, or other secretions. These are distinctions of great importance in a practical view, and will be more particularly illustrated in the consideration of the different articles.

In every age, cathartics have been freely employed, and are now found, as remedies; among the rudest and most uncultivated savages: But, though thus early and generally resorted to, their utility has not always been clearly perceived, or their administration properly directed.

When confidence was reposed in the tenets of judicial astrology, it was customary to prescribe cathartics at stated times and seasons, under the impression, that they were more beneficial at particular stages of the moon, or in certain conjunctures of the planets. Even at the present moment, the relic of this preposterous notion exists to a considerable extent, among certain descriptions of people, and proves, in some instances, a very serious impediment to rational practice.

Nor were the views of the humoral pathologists, in relation to this subject, more correct, or the principles on which these medicines were directed, less absurd. Conceiving that, by a process analagous to fermentation or putrefaction, a peccant matter was separated from the mass of blood, purges were given, with the intention of expelling it. As each fluid was conjectured to require its own appropriate evacuant, we had introduced into the nomenclature of our science the uncouth terms, cholagogues, phlegmagogues, and menalagogues. The views to which I have alluded, engendering these ridiculous notions, though long declining, may still be traced, in the reasonings and practice of many, who have received their impressions from the earlier writers. To what extent they are supported, has already been indicated. Nevertheless, as respects the use of this class of medicines, we have attained to greater accuracy, whatever may be the obscurity in which their precise *modus operandi* may continue to be involved.

The primary and most obvious effect of cathartics, is an evacuation of the bowels. These are liable to various accumulations of a morbid nature, which, remaining, disturb health, and frequently excite or confirm disease. Cathartics, in relieving the bowels, under such circumstances, extend also their operation upwards, and bring down, in many instances, the contents of the stomach. To this may be added, that the strong impression imparted to the liver and pancreas, excites these glands to invigorated

efforts, and the result is, a vast increase of their respective secretions. It is in this way, that congestions, especially in the portal circulation, are removed—biliary calculi dislodged—and several other affections from organic obstruction, cured.

Cathartics have, moreover, a wider operation, in which the whole circulatory system is embraced, and, as a leading effect, vascular action greatly diminished. This they effect directly, by the removal of the irritating contents of the *primæ viæ*, and indirectly by stimulating the exhalent vessels on the surface of the intestines, and the very copious effusions which take place, are so much detracted from the circulating mass. Yet, it is not to be dissembled, that several writers, and some of these of high authority, have denied, that purging exercises any material influence over the blood-vessels. The arguments, however, by which this extraordinary opinion has been attempted to be maintained, are so slender and frivolous, as really to deserve no serious examination. All that is necessary, in order to its confutation, is, to recollect the extent of the intestinal canal, the number of exhalents opening into it, the prodigious quantity of fluids discharged by stool, and the depression of the pulse which uniformly takes place, as a direct consequence of these evacuations.

To this diminution of vascular action, we, indeed, owe the activity with which absorption is promoted by these remedies. Confessedly we have none, not even diuretics, which, in many cases, more strik-

ingly display this property. But cathartics, on another principle, conduce to the reduction of the pulse. It is a law of the circulation, sufficiently admitted, that, if depletion be made from any one set of vessels, the current of the circulation will be directed to these, and, of course, the blood diminished in other parts. Cathartics occasion this revulsion, and hence, in part, their utility in some of the diseases of the skin, of the head, and of the great viscera dependent on undue determinations of blood.

From what has been said, it follows, that, while the action of this class of medicines is undoubtedly stimulant on the stomach and bowels, all their remoter and more permanent consequences are unequivocally sedative, agreeably to my definition of the term, by which I mean, whatever abates the vigour of the circulation, and lessens general excitement. Medicines so pervading in their effects, must be calculated to meet a variety of indications. But, before I proceed to enumerate the diseases to which they are applicable, I shall lay down, more precisely, the rules for their administration.

1. As in the case of emetics, the medicine is to be given, in preference, on an empty stomach, and in the morning, or at bed time. By doing this, we prevent its being rejected, and secure a more easy and effectual operation. Exactly for the same reasons, the period of the intermission or remission of fever is to be selected.

2. Where there is much force of vascular action, or diminished susceptibility to their impression, or spasm, or inflammation, of the intestines, the use of them should be preceded by venesection, and in the two latter cases, their action may also be promoted by the warm bath, and a blister to the abdomen.

3. Let it be recollected, that there are cathartics of very different properties and modes of operation, and carefully adapt the medicine to the circumstances of the case.

4. Nor should it be forgotten, that the drastic cathartics operate, not only more leniently, but also more completely, when combined with some one of the milder purgatives, or by uniting, indeed, a number of the same description of these articles, with a small portion of some emetic substance.

5. To promote the action of this class of remedies, as well as to obviate griping, warm beverages are to be freely taken after the first discharge, such as chicken water, or gruel, or molasses and water.

6. To check hypercatharsis, most of the means prescribed to arrest the inordinate action of emetics may be employed. The best, however, is laudanum, largely given per anum.

SECTION VII.

The Practical Application of Cathartics.

IN entering on this subject, I am embarrassed by the difficulty of selecting, out of the infinite applications of this class of articles, such instances as may serve most clearly to illustrate their use in the cure of diseases. What is the morbid derangement, and especially of increased action, in which they are not employed—either with the view of cleansing the alimentary canal of offensive matter, from vitiated secretions or otherwise—of unloading congested organs, or directly reducing vascular excitement?

In noticing the several species of fever to which purgatives are appropriate, I may again remark, that, in the treatment of intermittents, it has, of late, become too much the custom to prefer them to emetics, as evacuants of the alimentary canal, preparatory to the use of the bark and other tonics. But this substitution is probably owing more to motives of convenience than to any conviction of their superiority.

Emetics are still generally considered, in certain forms of the disease, as indispensable. Yet, an adequate impression being made in this way, or where the case is mild, purging may be substituted, and particularly by the articles which strongly affect the chylopoietic apparatus.

Nor are they less serviceable in remittent and continued bilious fevers, which are indeed so similar to intermittent fever in their causes, pathology, and treatment, that what I have said of the one equally applies to the other forms of the disease. It may, however, be added, that in all these cases, the alimentary canal should be thoroughly evacuated, by which I do not mean merely the removal of the ordinary contents of the bowels, or of re-accumulations of bile. What I design to convey is, that in protracted and unrelenting cases, the purging, and with calomel, should be continued, till dark, tarry, fœtid stools appear. This species of glutinous matter is often very adhesive to the surface of the intestines, giving to it a sort of covering, over which common fæces and other matters pass, and are discharged, leading us to suppose, that the bowels are completely evacuated, when it still remains undisturbed. In all instances, its removal is productive of signal advantage, and, like the clearing away of the incrustation of the tongue, may be received as evidence of the restoration of the healthy action of the mucous surface. To accomplish this purpose, small and repeated doses of calomel, so small as to linger in the bowels, answer better than a large quantity at once.

Exhibited in this mode, it meets another important indication more effectually. Contrary to the prevalent notion, in the fevers emphatically denominated *bilious*, there is often a great deficiency of bile, the liver being so torpid, either from the force of the remote cause, or by early congestion, that its secretions are suspended, and, until their restoration, we advance slowly with the cure.

While on this point I may further observe, that as to intermittent fever, I think we have hitherto erred, in considering it too much as a *specific* disease, to be managed by *specific* remedies. Controlled by such views, we overlook some important circumstances, and are disposed prematurely to recur to those articles presumed to operate on the principle of *counter-agency*. To a want of attention to the *primæ viæ*, and to vascular action, not seeing in these respects that the system is prepared for the reception of bark, &c., may be traced, in my opinion, the frequent failure of our efforts to arrest this fever—its degeneration into the continued type, and the typhoid more especially, or becoming chronic, eventuating in visceral disorganizations and dropsical effusions.

Meaning, on a future occasion, to notice, more in detail, the course pursued in our yellow fever, I shall now be content to state, that, acting at first under the impression of its being a highly aggravated bilious fever, it was universally the practice to purge, even with the drastic articles, most steadily and copiously. Taught, however, at length, a more correct patholo-

gy, by dissections, and a closer examination of its phenomena, this treatment was in a great measure superseded, and the remedies became such as are suited to a very malignant species of gastritis, of the character of which the disease was deemed. The use of purgatives henceforward was limited pretty much to moderate evacuations in the commencement, and to the preservation of the bowels in a soluble state, in the subsequent stages, which indications were met by the mildest articles.

Concerning our more recent winter epidemic,* it is not possible, within a limited space, to indicate the precise practice, so diversified were its aspects in the several sections of the country, and, consequently, so different the means employed. As it occurred in this city, and still further north, purging was rarely found expedient, though, in the southern states, where it partook of a bilious diathesis, the freest evacuations from the bowels were demanded. Notwithstanding a contrary opinion has been strongly expressed by some physicians, I am persuaded of the rectitude of this practice, having witnessed the advantages of it among the medical class, natives of the south, with the disease, under my care, who retained, in any degree, the tendencies of their climate.

Into the treatment of ordinary typhous fever, purgatives now enter largely. To the work of Hamilton,† to whom the credit of having introduced the practice

* *Pneumonia typhoides*, or spotted fever.

† Hamilton on Purgatives.

is due, I must refer for all the illustrations of it by cases, and for many other interesting details. This fever had long been managed by emetics in the onset, and afterwards by the mild antimonials and other nauseating medicines, with a design of maintaining diaphoresis. Not much encouraged by the success of this practice, he resolved on the innovation just stated, and the experience of his new plan has fully convinced him of its superior efficacy. The usefulness of purgatives, he ascribes "to their acting through the whole extent of the intestines, and to their moving and carrying off feculent matter, rendered offensive and irritating by constipation, and the changed nature of the fluids, secreted into the intestinal canal." To accomplish this purpose, he gives a purgative nearly every day, and of a very active sort, as calomel, or jalap, or both united. While thus attached, however, to copious purging, he by no means excludes such other remedies, as the fluctuating state of the disease may exact. That this practice is sound is very generally admitted. In his valuable work on Typhus, Dr. Armstrong concedes the utility of purging in the disease, and in part on the principles above stated. But he also believes, that it has "a far more salutary effect in restoring healthy secretion, and in removing irregular distributions of blood, from the head, liver, and other parts." This is perfectly intelligible. But what shall we say of his further hypothesis, that purging does good by preventing the absorption of excre-

mentitious matter and morbid secretions into the circulation ?

The same practice has been extended to puerperal fever, with no less success. Early and thorough evacuation of the bowels constitutes the chief system of prophylaxis, and the same, with an emetic occasionally, and venesection, the measures of cure in the early stage of this disease, as recommended by the latest and best authorities.

In the exanthematous fevers much may be expected from cathartics, which seem to operate as well by the translation of action from the cutaneous to the intestinal capillaries, as by the direct removal of irritating and offensive matters from the bowels, &c. Next to cool air, purging perhaps is found, in small pox, most to allay heat, reduce excitement, and lessen the crop of the eruption. Except an early use of an emetic, and venesection, I know of nothing so beneficial in ordinary measles, as the milder laxatives. They occasion a depletion by the bowels, which mitigates or prevents the pneumonic symptoms—and the diarrhœa, one of the most common of the sequelæ of the complaint, is certainly not so apt to take place. In erysipelas, where the inflammation runs high, the utility of purgatives is fully established. The evacuations ought to be copious, and, in the progress of the attack, frequently induced: notwithstanding which, loss of blood will sometimes be necessary, and, on account of the heat and irritation of the surface, topical applications may be required.

Not less are they employed in scarlatina. "Many years ago," says a distinguished practitioner,* "when the prejudices against the use of purgatives were more decided, and more prevalent than they are at this time, I ventured to prescribe them. My doing so was, indeed, the necessary consequence of the advantage I had experienced from the same remedies in typhus. I had learnt, that the symptoms of debility which take place in this species of fever, so far from being increased, were obviously relieved by the evacuation of the bowels. I was, therefore, under little apprehension from them in scarlatina. I have never witnessed sinking and fainting, as mentioned by some writers, and so much dreaded by them: neither have I observed a revulsion from the surface of the body, and consequent premature fading, or, in common language, striking in of the efflorescence, from the exhibition of purgatives."† Having previously vomited, the practice, as here described, with the occasional introduction of the lancet, is undoubtedly best adapted to the disease, as it occurs in this section of the United States. It appears to effect a cure in a more summary manner than any other mode of treatment, and likewise to afford the best means of preventing the dropsical swellings, and other derangements of health, or of removing them, when, by negligence or unskilfulness, they have been permitted to take place.

* Hamilton.

† Hamilton on Purgatives.

Nor to the acute affections of the surface are these medicines restricted. They have, on the contrary, even from the remotest times, been much employed in all chronic eruptions. In some cases, and especially such as are attended with inflammation, they undoubtedly prove efficacious, and more frequently in children than persons further advanced in life. Many of the eruptions, however, are purely local, and being situated on the very verge of vitality, are little, if at all, influenced by general or constitutional impressions, and, therefore, are more advantageously managed, by direct applications to the part on which they are seated. Diversified as are such affections, it would be impossible, within the narrow limits to which I am confined, to indicate, with any sort of precision, a system of practice applicable to all cases. I must, therefore, refer to the works of established reputation on these subjects, and particularly to Willan's and Bateman's treatises on cutaneous diseases.

It is hardly necessary to mention, that cathartics constitute an important part of the treatment of the morbid states of the alimentary canal itself. Dyspepsia, under which title are included an infinity of affections, proceeding either directly or indirectly from the stomach, in all its varieties and modifications, requires to be managed, so far, at least, as preserving the bowels in a laxative state, by the occasional interposition of this class of remedies. Constipation, indeed, under all circumstances, is to be obviated. This, however, is a relative term. While a large majority

of the species require, for the preservation of health, a daily evacuation, there are some who are said to have passed days, weeks, months, and even years, without experiencing, from the interruption of so important a function, any very serious inconvenience. Cases to this purport are recorded, and a large collection of them may be met with in Haller's great work on physiology. Yet such a habit is generally found to be incompatible with the enjoyment of health, and is marked by head-ache, vertigo, nausea, fœtid breath, offensive excretions, with numberless other symptoms of a highly unpleasant and even disgusting nature.

Numerous causes produce this condition, which may be, perhaps, arranged under two heads—as occasioning deficient irritability of the intestines—or suppression or vitiation of bile. To enable the intestines to perform the office of propelling their contents, two circumstances are required, a stimulus, which is the bile, and susceptibility to its action, a defect in either of which equally interferes with it. Each of these states can sometimes be removed by purging, and some auxiliary measures, and the articles required do not differ materially. In the first, let the blue pill be given every other night, and worked off the next morning by some laxative. Calomel purges answer best in the second, by the peculiar impulse which they impart to the liver, exciting and correcting its secretions: failing, however, a slight salivation should be induced, or, which sometimes does very well, the blue pill, as an alterative.

The bowels have their discharges interrupted by spasmodic constrictions denominated colic. Without engaging in the enquiry relative to the varieties of this disease, I shall state, that in all such cases, cathartics are indispensable. Being customary, here, to direct the more active articles, it is important to know, that, in some instances, the most lenient are to be preferred. There is a certain relation between the power of a medicine and the tone of the system, which seems sometimes to be graduated with extreme nicety and precision. What operates at one time we find inert at another, under apparently similar circumstances, and in the same person. This is owing to the want of harmony in the case.

In an opposite state of the bowels, purgatives are not less demanded. No physician is ignorant of their utility in dysentery, in the several forms of cholera, and, in some instances, even of diarrhœa. Concerning the first, it seems to be a maxim settled, and very much by common consent, that they are to be continued till the discharges begin to assume a natural appearance. As a general rule, this is unquestionably correct, though in this form of intestinal disease, proceeding, as it sometimes does, from mere irritation, the purging may be intermitted sooner, and anodynes resorted to with very great advantage.

Cholera is somewhat differently managed. An opiate, or cordial, or other soothing measure, as the warm bath, or fomentations, are first employed, and, next, evacuants of the bowels, to carry off offensive ingesta,

or the excessive accumulations of bile, which occasionally exist. The same plan may be pursued in cholera infantum, though we are, more generally, compelled to premise purging. Of diarrhœa, the case which calls for purgatives is where it arises from acrid bile, or vitiated intestinal secretion, or indigestible food, or any other cause irritating and provoking the bowels to discharges of preternatural frequency.

What is the true pathology of jaundice, seems not to be determined. It has been generally ascribed to absorption of cystic bile into the circulation, from some obstruction to its passage into the duodenum. That it does not depend on this cause exclusively, is sufficiently shewn by a case reported by Richter, where the disease occurred in an individual, who, after death, was found destitute of a gall bladder. I have long entertained doubts, whether it could be assigned, under any circumstances, to the absorption of either species of bile. It appears to me, that, were it owing to this cause, the disease might at any time occur, as there is always bile exposed to the action of the lymphatics—that though the stools usually indicate a want of bile, this is not uniformly so—that in many instances of the disease, no obstruction existed on a post mortem examination, in the ducts of the liver, to account for it—that the peculiar bitter taste of bile is not discernible, and, finally, that, were it floating in the circulation, it should tinge the whole mass of the blood, which it does not, the yellowness being only apparent on the separation of its constituents, in the serum.

Denying, therefore, this hypothesis, I am led to believe, that in some undefined state of the chylopoietic viscera, with which the capillaries of the skin sympathising, the serum of these vessels undergoes a morbid change, as in yellow fever, and in certain cases of poisoning, as by arsenic and other minerals, and from the virus of venomous serpents, the viper, rattlesnake, &c. The same discoloration which takes place in a part from a bruise, happens in all these instances, and is equally referrible to the torpor or impaired vitality of the extreme vessels. In jaundice, instead of an absorption, there is commonly an entire want of bile, the secretory office of the liver being suspended, as in pestilential fever, the early stage of cholera, &c., and the first manifestation of recovery, is the restoration of hepatic action. It is on this principle, that the efficacy of emetics, and particularly mercurial purgatives, is to be explained, and on which last, whatever theory may be adopted, must we mainly rely in the treatment of the disease.

As much as any diseases, are the genuine phlegmasiæ treated by purgatives. Of the more inflammatory of this order is acute rheumatism, and, of course, these, among other evacuants, in the early stage, are useful. Neglected, or ill managed, it will sometimes continue without any considerable abatement for weeks, or even months. The phlogistic diathesis of the arteries is here kept up, while the strength in general is so much reduced, as utterly to forbid the further loss of blood. Even if venesection be admissible

from the degree of vigour remaining, it only has the effect, as I have often remarked, of augmenting the excitability of the vessels, and thereby aggravating the mischief. In this state, purging also occasionally proves of great advantage. It seems, more than any other remedy, to quiet the mobility of the arteries, and to diffuse excitement over the system, which, under such circumstances, is chiefly concentrated in the blood-vessels.

Consulting the history of diseases, we shall often discover certain relations between them, which will lead to the most curious and interesting practical conclusions. Every one who has had much clinical experience must have observed, how intimate is the connection which subsists between rheumatism and the acute affections of the intestinal canal, as cholera, diarrhœa, and dysentery. The affinity, indeed, is so striking, especially with dysentery, that this disease has been maintained, on no slender evidence, to be a rheumatic state of the bowels. Be this, however, as it may, we learn that they frequently alternate, or that the affection of the limbs is thrown on the intestines, or reversely—by which translation, the pre-existing complaint, for the time, is relieved. Nothing, indeed, is much more common than to see rheumatism suspended, or even cured, by diarrhœa, spontaneously induced. The course which nature thus points out, I have successfully imitated, in the more obstinate and protracted cases of the disease.

The alliance is very close between gout and the preceding disease, so close, indeed, that they cannot always be discriminated. It will be found, that active purging, in regular arthritis, is an ancient practice, and which must have been even violent, as the articles then in use, were of a severely drastic nature. In fact, it prevailed, with no interruption, till proscribed by Sydenham, from purely theoretical prejudices, it being, he observes, "an inviolable law of nature, that the matter of the disease should be thrown out by the extremities, emetics and cathartics will have no other effect, than that of bringing back the offending matter to the bowels."

Enslaved by his venerated authority, we have, ever since, with some limited exceptions, nearly abandoned the use of purgatives, and been content to let the attack spontaneously exhaust itself. To envelope the limb with flannel, and to urge a patient endurance of the pain, constitute, proverbially, the amount of what is at present generally done in a paroxysm of gout. The authority of Sydenham has been, in this case, exceeding mischievous, having led to the desertion of a practice, which, if judiciously applied, is, in my opinion, safe, and peculiarly calculated to overcome this most distressing disease. Interesting as would be the inquiry, it is not allowed me to indulge in any minute, or lengthened disquisition concerning the nature and causes of gout. My impression, very concisely stated, is, that this disease, if not originating in, has a most intimate connection with, certain states

of the alimentary canal. I am inclined to this view of the subject, among other reasons, from having so frequently observed gout to commence with those symptoms, which denote a depraved condition of the stomach and bowels. The principal indications of an approaching attack, are, almost invariably, flatulence, sour eructations, indigestion, vitiated appetite, nausea, strong sensations of internal heat, and obstinate constipation, or laxity of the bowels. Taken at this period, an emetic or purgative will often prevent an attack.

It may seem, at first, somewhat singular, that I should place in the *primæ viæ* a disease, the apparently regular, and certainly ostensible seat of which, is in the extremities. Were it permitted me to extend the inquiry, I could easily show, that there is nothing irrational in the hypothesis, or which is not illustrated and confirmed by many analogous cases. Whatever may be thought of the opinion I have ventured to advance on this subject, it may be confidently stated, that the practice it dictates is sound, and fully warranted by experience.

I have now, for twenty years, employed purgatives in the paroxysms of gout, and with unequivocal advantage. Not content with simply opening the bowels, I completely evacuate, by active purging, the whole alimentary canal. This being accomplished, all the distressing gastric and enteritic sensations are removed—the pain and inflammation of the limb gradually subside, and the paroxysm, thus broken,

speedily passes away. To effect these purposes however, it is sometimes necessary to recur to the remedy repeatedly. Two of the best of the late English writers on gout, are decidedly in favour of purging in the disease. On this point, Dr. Sutton holds nearly as strong language as myself: and Dr. Scudamore says, that he has “invariably employed, with the greatest advantage, purgative and diuretic medicines conjointly.”

Differing as practitioners may on other subjects, there seems to be perfect unanimity as to the great utility of purging in most of the complaints of the head.

It is commonly maintained, that the proximate cause of apoplexy consists in compression of the brain, produced either by congestion, or an extravasation of blood, &c. This, undoubtedly, is the received doctrine. But of late it is controverted by M. Serres, a distinguished French pathologist, a summary of whose views I shall present.

Denying that either apoplexy or palsy is owing to compression of the brain, he maintains that the effusions of serum, and extravasations of blood, generally assigned as the cause, are the mere effects of pre-existing irritation or inflammation in the meninges, or to the same, or some other morbid condition of the substance of the organ itself.*

* It is but justice to Dr. Physick to state, that pathological doctrines of this kind were advanced by him in his Inaugural Thesis, published at Edinburgh, in 1792.

To support these views, he appeals to an extensive series of dissections carried on in the hospitals at Paris. Of one hundred cases of apoplexy, twenty-one were simple, and seventy-nine complicated with paralysis—of the former of which, sixteen showed the pia matter injected—with dilated vessels—and the tunica arachnoides opaque and thickened—with much serous effusion. The remaining four of the twenty-one cases presented sero-sanguineous effusion, attended by nearly the same state—though a somewhat more altered structure of the membranes.

But in the cases of complicated apoplexy, the substance of the brain itself was found *changed*, with no affection of its envelopes. Excavations were met with in its structure, filled with blood of various appearances—while the surrounding substance of the organ was red, irritated, inflamed, or indurated. He thinks, therefore, that he is entitled from these, and further corroborative examinations made by others, to conclude,

“1st, That when an apoplectic attack presents no symptom of paralysis, we may presume that its seat is in the meninges, and that the substance of the brain is not dilacerated or altered.

“2d, That when, on the contrary, paralysis becomes complicated with apoplexy, it is no longer in the meninges, but in the brain itself, which is the principal seat of the irritation.

“3d, That, serous, sanguineous, sero-sanguineous, and purulent effusions, are owing to irritation in the

meninges or the brain itself,—or to rupture of arteries or veins, which may take place during apoplexy, though subsequently, and as the effect of the previous irritation.”

Doubtless these are very curious and interesting views, proceeding from a source so respectable as to command our utmost attention. Before, however, we implicitly adopt them, we ought, perhaps, to pause, and wait for further and confirmatory evidence of their validity. As to the abstract position of serous effusion, or even *sanguineous extravasation*, following irritation, or other diseased states of the brain, it has some collateral support from the consideration, that the same happens with regard to the lungs. The effusions, extravasations, and hemorrhages of these organs, are indisputably dependant on a pre-existing morbid condition, and even where a rupture of a vessel takes place, it is no exception—as here, except in case of violence, it gives way by losing its natural strength, from the effect of the previous disease.

That in apoplexy, congestion, or an extravasation of blood, often exists, dissections have abundantly shown. But, whether they be the effects of disease, primarily seated in the brain, or produced secondarily, by sympathy with the stomach, is not so manifest. Of late, it has been held, by some of the pathologists of the continent of Europe, more especially, that apoplexy is really a gastric affection, and, in support of this hypothesis, they have argued with great plausibility. Whether we concur, or not, in this view of the subject, to the full extent, it must be

conceded, that certain impressions on the stomach are capable, and do very often excite the apoplectic state. Evidence to this point may be collected in the history of those cases of the disease, brought on by the narcotic poisons, by worms, by a load of indigested matter—and by various depraved states of this viscus, the consequences of excess in eating or drinking.

Curious as this may be, as a matter of speculation, I do not know that it leads to any practical difference, so far, at least, as respects the employment of cathartics. Next to venesection, and sometimes emetics, this class of remedies constitutes, in the hands of most practitioners, the leading ingredient in the management of the case. Yet, to be effectual, the purging should be copious, and induced by the drastic medicines. Evacuations of this sort, will be still more required where we have reason to suspect the cause of the attack to be accumulations in the intestines.

The pathology of palsy, is nearly the same as that of the last disease. They are often, reciprocally, cause and effect, or convertible cases. Equally, also, does palsy occasionally arise from gastric irritation or oppression. The fact, indeed, in relation to it, is better established, since, confessedly, one species of it, is occasioned by the direct impression of lead on the stomach. Nor does the practice differ, at least as to cathartics, which, in the commencement, are used by common consent. But in the advanced stages, they are usually made to give way to tonic and stimulating measures, as well internal as external.

Dissatisfied with this course, I have, for many years, abandoned it, and rely now almost exclusively on evacuating the bowels by active purgatives. Of the propriety of the change I can entertain no doubt, the success having exceeded my most sanguine expectations. To do justice to the practice, it should be steadily persisted in, and aided by such remedies as the case may, from time to time, demand. Of the auxiliary means to which I allude, there is none so important as a repetition of blisters, not to the affected limb, for this is comparatively useless, but to the back of the neck, or, what is still better, issues on the same part, or behind the ears, or on the top of the head. These drains must be kept freely discharging, by irritating dressings.

Even those cases originating in the spinal marrow from vertebral affections, hitherto treated on the authority of Mr. Pott by caustic issues, are more effectually managed by active and continued purging, in some instances, even for months. This is another improvement due to Dr. Physick, who has conducted to a successful termination several such cases, seemingly irremediable, and which, I am quite sure, would have proved so in most other hands. Nor is ordinary paraplegia, and especially when of cerebral origin, which sometimes happens, as is so clearly pointed out by Baillie, less benefited by the same plan.*

* Vid. Transactions of the Royal College of Physicians, Vol. V.

What, on the whole, I wish particularly to caution against, is the premature employment of stimulating and tonic measures in the several forms of palsy. The disease is, for the most part, one of *oppression*, and not of *debility* from *exhaustion*. Even in the chronic or protracted states of it, where great apparent weakness and attenuation of frame exist, we shall often find the pulse hard and corded, with other marks of the febrile movement, or low from depression. It will always be right, under such circumstances, to omit every species of stimulus, internal and external, and recur to evacuations, especially from the bowels, and by the most active of the drastic articles. The elaterium is here one of the best remedies which I have ever used. Copiously as it purges, we shall find that, instead of increasing debility, it recruits strength by removing disease.

As regards external applications, and especially frictions, I am quite sure they are greatly abused. As much as any thing whatever are they detrimental in the least excited states of palsy, by increasing vascular action, and unduly determining blood to the affected part. They should be reserved only for the torpid and subdued states of the disease. On the whole, I repose the highest confidence in the management of palsy, in nearly every state and form of the disease—on occasional bleeding, active purging, and ultimately a salivation—being persuaded that these failing, we have little to expect from any thing else.

I have already intimated my opinion of the nature of hydrocephalus internus. Whatever may be the speculative differences on this point, no one disputes the great efficacy of purging, in the commencement of the complaint. It is called for, as well to divert blood from the head, as to arouse the torpid condition of the bowels—to remove the foul accumulations which they contain, and rectify the vitiated secretions of the liver. This organ is most materially affected in the disease, always in its functions, and sometimes in its structure. In many instances, when a hydrocephalic state of the brain was suspected, I have seen the disordered stomach, the dilated pupil, the comatose tendency, and other alarming symptoms, removed by very copious evacuations. Cheyne reports a remarkable case to the same effect, in which relief was immediately afforded by the bringing away “two chamber pots full of the most extraordinary collection of fæces.”* Constant purging will be found more effectually to control the disease, than even venesection.†

Need I add, that purgatives are entitled to our highest confidence in phrenitis, a case which partakes so much of the nature of hydrocephalus, in its early stage.

To mania, in all its varieties, this class of remedies has been immemorially applied. The ancients managed the disease, and especially melancholia,

* *Essays on the Diseases of Children.*

† For a more full statement of the pathology of hydrocephalus and of mania, vid. the history of mercury, Vol. II.

chiefly by purging. Effectual as it may be here, it is still more so in the furious shapes of insanity. In the mental affections we frequently meet with cases, distinguished by an insensibility to impressions of every description, so much so, that even the most copious venesection produces no effect. The vessels, under these circumstances, acquire a certain habit of perverted action, which is not at all influenced by the loss of blood. Continued nausea, or occasionally active vomiting for several days successively, as before mentioned, will sometimes arouse the system out of its indolence or torpor—and, when this fails, I have often derived the most signal advantage from large doses of drastic cathartics, so as violently to gripe and otherwise harass and torment the bowels. This practice is also well calculated to subdue the ferocity of the disease.

Being fully established, ophthalmia, even in its simplest forms, proves a very unrelenting case. That purging is useful in the early shape of it, is sufficiently understood and practised. But it may not be so generally known, that when all other depletory means have failed, the daily exhibition of active purgatives, for a week or more, will succeed.

To comment on each of the series of visceral inflammations individually, would be a tedious repetition of the same observations. Yet there is one or two of these affections, in which it may be proper to insist more particularly on the utility of purging. From the enormous size of the liver, the vast flow of blood

to it, and its peculiar structure, inflammation here is rapid in its career, and often requires, to arrest its progress, a concurrence of all our powers. . In aid of venesection, which, in its fullest extent, is indispensable, the administration of brisk cathartics forms a principal part of the treatment. They reduce the force of the circulation in the way before indicated, and obviate those congestions which lay the foundation, or so much aggravate inflammation.

Nor must I pass over peritonitis without a remark or two. This is a disease in which purging has hitherto been very sparingly employed, and by some even condemned. It is said, that however great the pain, there is no inclination to stool, nor does opening the bowels afford any immediate relief. Considerations of this sort have probably led to the depreciation of purgatives. But Broussais and other late writers consider the practice injurious, by augmenting the sensibility of the membrane, and increasing inflammation. To these views I cannot accede. It is now admitted that purging is one of the most efficient measures in the early stage of puerperal fever dependent on inflammation of the peritoneum, and why should it not be equally so in the case before us? It has uniformly been my practice to rely much on purgatives in this disease, and, unless I am greatly deceived, with decisive advantage. What is there in the nature of peritonitis that precludes the use of a remedy so beneficial in other active inflammations?

Of the use of purging in ordinary hæmorrhage, I have little to say. Excepting in epistaxis, where, as in all other determinations to the head, it proves efficacious, it is not commonly urged farther than merely to keep the bowels in a laxative state. The practice, I think, however, has been too much restricted. Certainly, in active hæmoptysis, whether we regard the reduction of vascular force, or the removal of the irritation from loaded bowels, it is demanded. We also occasionally meet with hæmoptysis, connected with no slight depravation of the primæ viæ, indicated by the furred tongue, fœtid breath, and habitual constipation, which condition maintains the hæmorrhage, and is most effectually overcome by the alternation of the blue pill and mild laxatives.

There is, moreover, a species of hæmatemesis, occurring in females in early life, which is stated to be very successfully managed by the liberal use of purgatives. It had generally been held, that this particular hæmorrhage, which is proved to have no connection with any organic affection of the stomach, is a discharge vicarious to the menses. To this opinion I still incline, because, among other reasons that might be alleged, I have always remarked, in the cases which have come under my notice, that amenorrhœa existed. It is now contended,* that it proceeds from, or, at least, is mainly dependent on, a constipated state of the bowels—the fæces which are brought off

* Hamilton on Purgatives.

being always copious, and of an unnatural colour, consistence, and smell. What is the success of this, compared with the former mode of treating these cases, I will not undertake to pronounce, though I think well of it.

The diseases arranged under the class of neuroses, or, in other words, the nervous and spasmodic affections, will next engage my attention—and I commence with chorea sancti Viti. Conformably to my experience, I should say, that there is scarcely any chronic affection of long standing, that yields more readily to any plan of treatment, than chorea to purgatives. The practice, indeed, has acquired much confidence, and very widely prevails. The medical journals of Europe contain many cases of cures of this disease, thus effected. Chorea has two stages, and, in the first, while the intestines still retain their sensibility, gentle purgatives, repeated as occasion may require, will cure it, or rather prevent its full formation. But, in the second, a more careful attention is necessary. Cathartics the most active must be here given in successive doses, in such manner, that the latter doses may support the effect of the former. The impression once made on the bowels, is never to be permitted wholly to subside. Without this, relapses are apt to take place, and we lose all that we had previously gained. Nor are we to trust exclusively to a single remedy. The disease, if not inflammatory, is often connected with a plethoric state of the vessels, and calls for the lancet. To bleed freely in it

was the practice of Sydenham, the propriety of which has been amply corroborated, as well by my own, as the experience of other practitioners. Topical evacuations, by leeches or cups, from the head, are also in some cases demanded, and, to confirm the cure, a course of roborant measures becomes expedient.

In epilepsy, I have, also, used purgatives with the happiest effects. This practice, if not original with me, has never, perhaps, been pushed to the same extent by any one else. To its adoption I was led, not less by my theoretical views of the disease, than by the total failure of the ordinary plan of treating it by tonics. Nor could I help being encouraged to pursue it by the great advantage which I had derived, or seen derived, from the same practice in several of the kindred affections. Epilepsy, in common with all these cases, is connected with a certain mobility of the system, which seems to proceed very generally from irritation in the alimentary canal. Thus, among a variety of other causes, it has been brought on by worms, by the irritation of dysentery, by the pain of dentition, by the narcotic poisons taken into the stomach, by intoxication, by repletion from excess in eating, by acidity or flatulence, by eruptions repelled from the surface, and, finally, by obstinate constipation. When, therefore, we suspect the disease to be seated in the alimentary canal, we must look to emetics and purgatives as the chief means of cure. The circumstances under which the former are proper, I have already indicated. Determining on the use of

the latter, it will not do merely to evacuate the bowels. Cathartics, on the contrary, must be repeated almost daily, without interruption, unless absolutely forbid by circumstances. By continuing this course for many weeks successively, I have cured several cases of the disease, and afforded considerable relief in some others. My success, indeed, has been such, that I am almost encouraged to hope, could we induce our patients to persevere in the use of this process, the disease would become incomparably more manageable than it has hitherto proved.

Let it not, however, be understood, that I limit the treatment of epilepsy only to purgatives. Even those cases most strictly primary affections of the alimentary canal, uniformly require the aid of other remedies. To remove the state of plethora, so often incident to the disease, venesection, as well as topical bleeding by leeches, or cups to the head, becomes necessary. Nor is it less important, under such circumstances, to impose the strictest regulations with regard to diet. The lowest and least stimulating articles, as vegetables only, or bread and water, I have sometimes found absolutely indispensable in conducting the cure. But though, probably, a plurality of the cases of epilepsy, arise from derangement of the alimentary canal, some may be traced to organic affections of the brain. These present much greater difficulties in the management, and generally prove altogether incurable.

Of the use of purgatives in hysteria, I have not much to say. As its name imports, this disease has been supposed to originate in the uterus. Notwithstanding what may be urged so plausibly to the contrary, I cannot help suspecting, that this view of its pathology, in a general sense, is as unfounded, as the practice deduced from it has proved unsuccessful. Like all the rest of what are denominated nervous affections, this seems to be often intimately associated with certain morbid conditions of the stomach and bowels. The symptoms denoting this connection, in the present case, are violent pains in different parts of the alimentary canal, hiccup, sour eructations, flatulence, indigestion, constipation, vomiting or purging, which usually precede a paroxysm. In this opinion I am supported by the results of my own practice, and the concurrent experience of some very distinguished authorities, in the list of which is Hamilton, who, to illustrate, as well as to vindicate, the mode of treatment deduced from it, has collected a number of cases, in the appendix to his work on purgatives.

That purging alone will always cure hysteria, I am not prepared to assert. Though I have often rendered essential service by the process, it has not been my custom to trust to it exclusively. Many cases of it are attended with a full state of the vessels, and even require bleeding—while others seem, from the commencement, to call for stimulants and tonics. My practice in the former is, to evacuate the bowels by

the steady exhibition of cathartics so long as there appears to be a necessity for it. Before this is effected, I have sometimes had occasion to repeat them every third day for a very considerable period. Commonly, however, they may be omitted in two or three weeks. The alimentary canal being thus relieved, tone may be restored to the system, by combinations of the fœtid gums with the chalybeate preparations, or by the bark and similar articles.

It may be collected, from my present reasoning, as well as from views formerly presented of the disease, that cathartics are extremely important in hypochondriasis. I cannot now enter more fully into its pathology. Derangements of the chylopoietic apparatus, with the habit of constipation, as a consequence, are inseparably associated with it. Theory apart, these facts are sufficient to indicate the necessity of purging in the beginning—the subsequent use of mild laxatives, with, occasionally, an alterative course of mercury, and, finally, tonics. By this plan we succeed in restoring the natural hepatic and intestinal secretions, on the accomplishment of which, the most distressing symptoms disappear, leaving little to contend with, save a state of nervous mobility, readily overcome by measures of general invigoration and moral discipline.

Tetanus, the last disease of this class on which I shall at present make any remarks, is divided into two kinds, the idiopathic and symptomatic. The first is produced by general causes, and the second

results from wounds or other injuries. Tetanus of the former species, I cannot help considering as merely an acute and highly aggravated shape of some of the preceding affections—or of rheumatism. Like the former complaints, it originates in a variety of causes, though, by whatsoever it may be produced, the attack is, for the most part, ushered in, and accompanied, by the strongest indications of the alimentary canal being seriously affected. Even where it is occasioned by a wound, often much anxiety and distress is soon felt at the præcordia, and sickness of stomach, and spasms of the bowels, follow. But the irritation of a local injury is only one of the causes of the disease. Tetanus is also excited by the vicissitudes of heat and cold, by exposure to marsh miasmata, by exhaustion from over exertion, by worms, by the acrid matter of dysentery, or other sordes, by the bites of venomous reptiles, by powerful stimuli acting on the stomach, as the stramonium, camphor, hemlock, ardent spirits in excess, and, lastly, by constipation of the bowels. Granting this history of the disease to be correct, the propriety of actively evacuating the alimentary canal becomes obvious.*

In one variety of tetanus, the utility of purging is indisputably established. My allusion is to trismus

* That *idiopathic* tetanus may appear as an aggravated form of epilepsy, hysteria, &c., there can be no doubt: and, by exposure to cold, and especially at night, a state of rheumatism, with a general rigidity of the muscles, is a common occurrence.

nascentium, or that spasmodic affection which occurs in the first days of infancy, in consequence of a disordered state of the stomach and bowels, from the retention of the meconium, a congenital accumulation of acrid and offensive matter. Nor are we entirely destitute of direct evidence of the efficacy of the purgative plan, in the disease when existing under other circumstances. Cases are recorded by Hamilton, and by many contributors to the periodical journals, of a character the most conclusive and irresistible. Earlier authorities, and particularly the writers on the diseases of tropical climates, might also be cited in favour of copious purging in tetanus, when originating, as they state it frequently does, in loaded and oppressed bowels, or from acrid or indigestible matter in the stomach.

I once met with a case of confirmed tetanus in a boy, produced by a collection of cherry stones in the rectum, and another from ascarides. They both gave way almost immediately on the cause being removed. Can any thing prove more strikingly, the intimate connection between such spasmodic affections, and primary irritation in the alimentary canal, than these facts?

With this I conclude what I have to say, on the application of purgatives to the cure of nervous and spasmodic affections. My observations, though copious, have been general, and, perhaps, on this account wanting in perspicuity, and that nice discrimination, so much required in practice. This, however,

was unavoidable. It would have been inconsistent with my province, to have expatiated more on practical points, or to have descended further into the details of clinical instructions. My chief object has been, to point out some new views relative to these troublesome affections, which, I am persuaded, as well from my own experience, as that of others, are entitled to confidence, and will be found just and useful in practice.

Considering the close analogy between the opinions I have delivered, and those contained in the work on purgatives, to which I have so frequently referred, it may seem, that candour requires, that I should make a distinct acknowledgment, of my having borrowed them from that source. But such is not the fact. Twenty-five years ago, and very early in the progress of my professional studies, I read a paper before the Medical Society of this city, on the connection of the alimentary canal with the rest of the body, which embraces this very pathology, and, as an obvious deduction, precisely the same modes of practice. But, though I must assert my own claims to originality in this respect, I am not the less sensible of the obligations due to the distinguished character, who has propagated, and established, by the weight of his high authority, one of the greatest improvements which practical medicine, in my estimation, has received. To those who are not conversant with the reputation of the author of the work on purgatives, it may not be uninteresting to be told, from my own personal

knowledge, that, as a practitioner, he unites to the quickest perceptions, and the soundest judgment, the accumulated experience of half a century, acquired from private practice, and by an attendance in one of the most extensive, and, perhaps, the best clinical schools in Europe.

Evacuations by the bowels are deemed of the greatest service in dropsy. Many practitioners, indeed, rely almost exclusively on purgatives in these cases. By Sydenham they are recommended to be employed every day, unless prohibited by the debilitated state of the patient. This is, undoubtedly, sound practice, though it ought not to be resorted to indiscriminately. Dropsy is connected with very opposite states of the system, and requires different modes of treatment.— Every practitioner has seen it associated with fever, and no inconsiderable degree of even inflammatory action. Exactly as the case assumes this aspect, does it indicate the use of the *lancet*, the saline purgatives, and other depletory measures. In the selection of cathartics, it is too common to prefer the drastic species, or what were commonly called hydragogues. Medicines of this character are mischievous under the circumstances mentioned, and can be only advisable where the alimentary canal is torpid, the habit phlegmatic, without fever, or local visceral disease. That dropsy is sometimes a febrile affection, attended by fulness and activity of the arteries, is no new opinion, though it has recently been claimed as such. The doctrine is distinctly laid down by Stahl, in his chap-

ter on hæmorrhage, was adopted by Botellus, and, subsequently, by Grapengiesser, in his dissertation "*De Hydrope Plethorico.*"*

Dropsy, however, is, perhaps, not less frequently a disease of feeble action, the consequence of a debilitated and exhausted system, or of a highly disordered state of some one of the principal organs, as the spleen, liver, &c. Cases of the former description, instead of admitting the free use of purgatives, require a combination of tonics with the more stimulating diuretics, and, sometimes, when associated with visceral disease, a temperate exhibition of mercury. Of the several forms of dropsy, however, anasarca and ascites are the only ones in which purgatives are employed. To hydrothorax, they seem inapplicable, except sometimes in the very commencement of an attack: they do not here promote absorption, and are apt to increase debility, while the dyspnœa, and other distressing symptoms are aggravated.

Every point relating to scrofula, its origin, nature, and treatment, is equally unsettled. Conformably to their general views, the humoral pathologists considered it as consisting in a vitiated, acrimonious state of the fluids. But this is purely hypothetical, and, indeed, as has since been shewn to be, wholly unfounded, no such condition of the blood existing in the case. Cullen, after a good deal of floundering and hesitation, was ultimately led to conclude, that it depends "upon

* Vid. Duncan's Commentaries.

a peculiar constitution of the lymphatic system," and this opinion has subsequently, with few exceptions, been entertained.

My conviction, however, is, that the disease consists in a very disordered condition of the whole of the apparatus subservient to the processes of digestion, assimilation, and nutrition. It most probably commences in the stomach, and is thence extended to the bowels, the mesenteric glands, and progressively to the lymphatics, which ultimately become most prominently affected.

To be convinced of the correctness of this pathological view of the case, it is only necessary to advert to the history of its symptoms, the phenomenon on dissection, and the method of cure.

Early in the disease, the alimentary canal is much affected, as is evinced by the loss or depravation of appetite, indigestion, furred tongue, constipated or irregular bowels, tumid abdomen, with a dry husky state of skin. Notwithstanding the debility which may attend, my practice is uniformly to precede the use of tonics by copious and long continued evacuations. Emetics are sometimes eminently beneficial, when there is much gastric disorder. They may, however, generally be dispensed with, and purgatives substituted, which must be repeated in order to attain the full effect, every three or four days for several weeks successively. The stools are for the most part very offensive, and exactly as this foul matter is removed, so does the patient seem to be invigorated,

and rendered more comfortable. Combinations of calomel and rhubarb answer best in the beginning, and afterwards rhubarb with aloes and castile soap. It is also good practice in some instances, to give the blue pill at night, and work it off the next morning with some laxative.

Marasmus is a complaint more particularly confined to children, and usually makes its appearance soon after weaning. It commences very much as scrofula, with symptoms of disorder in the nutritive process, attended by pain in the abdomen, which gradually swells till it becomes hard and much distended, while emaciation in other parts of the body rapidly takes place. It is now that the lungs become sympathetically affected by a dry, hard, diminutive cough, or with wheezing and rattling indicative of bronchitis, accompanied by an irregular hectic fever.

The disease, as is alleged, may arise occasionally from other causes, and particularly worms, though it has most commonly its origin in a torpid state of the *primæ viæ*, sometimes from a strumous diathesis, with which the whole of the chylopoietic viscera, in which I include the lacteals, sympathises. To this conclusion I am led not less by the phenomena after death, than by the symptoms. Dissection shows the intestines filled with black *fætid sordes*, or impacted mucus, the liver much enlarged, and the mesenteric glands tumefied. Being thus loaded by these foul collections, the absorption of chyle is prevented, and languor from inanition ensues, attended by various de-

rangements. But, whatever theory may be adopted in this case, the practice is necessarily the same. Having its origin in worms, purgatives, which are among our best anthelmintics, will be useful: if owing to a torpid state of the intestines, they will be most effectually excited by active purgatives.

Two stages, the incipient and confirmed, are distinctly marked in marasmus. In the first, the bowels are not altogether inactive, and mild purgatives, repeated at proper intervals, are to be employed. But, in the second stage, there is little sensibility, and the collection of feculent matter is prodigious. We are, therefore, required to purge actively. This copious purging, instead of adding to the debility of the child, will often be found to relieve its distresses, by daily recruiting its strength. But, should it fail, we may succeed in rectifying this morbid condition, by small and repeated doses of calomel, so small, indeed, as to produce, for a time, no sensible effect. The fourth or the eighth of a grain, united with still less opium, is the proper proportion, and this course should be continued for several weeks. The blue pill here sometimes answers admirably. What also will prove useful in the advanced period of the disease, is the syrup of sarsaparilla, or the chalybeate wine. Nothing however, is more mischievous than the premature employment of tonics.

In chlorosis, or that general derangement of health, to which girls are exposed about the season of puberty, cathartics have sometimes signalized their pow-

ers. As it is not permitted me to enter into such inquiries, I shall overlook the multiplied theories that have been advanced, to explain the singular group of affections incident to this period of life, or of the divers modes of treatment, which, at different times, have been adopted. The writer, by whom this practice is particularly recommended, remarks, that the "slightest attention to the general history of the disease, evinces, that costiveness precedes and accompanies the other symptoms. It is this which induces the feculent odour of the breath, disordered stomach, depraved appetite, and impaired digestion, which preclude a sufficient supply of nourishment, at a period of life when it is most wanted." Considerations of this sort, led him to the use of purgatives, and he declares, that they proved safe, and quickly salutary.*

Of this practice, I cannot speak with much confidence from personal knowledge. Though a good deal consulted in the diseases of women, I have not had many very well-marked cases of chlorosis. The vigour of the female constitution, in this country, seems to prevent its occurrence, in any very great degree. Yet, in states of disordered health closely allied to it, and particularly in some of the forms of amenorrhœa, I have seen the best effects from active purging.

Of this I am entirely assured, that purgatives have hitherto been too sparingly resorted to in the cachetic complaints generally. That they are, some-

* Hamilton on Purgatives.

times, of the greatest advantage in scrofula, and its associate affections, I have endeavoured to show. The white swelling I have seen most essentially relieved, by a course of purging, and its beneficial effects are now fully attested, in the morbus coxarius, as well as in the disease of the spine. It is hardly less useful, in the dissipation of glandular enlargements, and particularly of those tumors approaching to scirrhus, which occur in the mammæ of women. But, to be productive of any decisive utility, in any of the preceding instances, this plan of treatment ought to be persisted in with steadiness, and for a great length of time, and there should be brought to its aid various other measures, such as general or topical bleeding, blisters, low diet, and a state of rest. Cases of the above diseases, I have cured, by purging every other day, for several months successively. It was Dr. Physick, I have reason to believe, who originated this practice, or, rather, urged it further than before had been done. Much has it already accomplished, though infinitely more may be anticipated from it, when it comes to be applied, as I am sure it might, to most of the diversified shapes of chronic inflammation.

Extensively as I have entered into the consideration of the use of cathartics, many cases still remain to be indicated, in which they are much prescribed, and with the greatest advantage. But these are, comparatively, of minor consequence, and the principles which I have already delivered on the subject, will

serve sufficiently as a guide to the further application of the remedies. Even at the present time, cathartics are too much neglected in the management of disease, and, most commonly, from an impression of their extremely exhausting effects. As regards acute diseases, there is no doubt that active purging reduces arterial action very rapidly, and, with it, the general excitement of the system. But such is precisely what is desirable, and in most of the chronic affections, where any increase of debility is to be avoided, these medicines would really seem to operate very differently.

Nevertheless, as in all other instances, a recurrence to purgatives is to be controuled by a sound discretion, and, under certain circumstances, they are either utterly precluded, or to be very sparingly and cautiously used. Exceptions to their general use, at least to their active use, may be found in all low conditions of the system—in most of the complaints of the chest, and especially where expectoration is solicited—in the first stage of inflammation of the stomach and bowels—or, till venesection has been carried to a considerable extent—in hæmorrhoidal predisposition—and during menstruation, pregnancy, and immediately after delivery.

It is a curious fact, confirmed by experience, that, urged to any extent, evacuations from the bowels, are found, in the complaints of the lungs, mischievous, and in some cases so much so, as to be wholly inadmissible. Even in pleurisy, we cannot purge

with the same freedom as in other cases of acute inflammation—and in the chronic pneumonic affections, especially in pulmonary consumption, the system immediately sinks under the operation of purging, and hence we are so careful to restrain diarrhœa in the disease.

SECTION VIII.

PARTICULAR CATHARTICS.

Ricini Oleum.

CASTOR OIL is derived from the seeds of the *ricinis communis*, a plant of the East and West Indies, which grows luxuriantly in many parts of the United States.* The seeds are variegated with black and white streaks, resembling somewhat in shape and colour the insect *ricinis*, or tick, whence the name is derived. They were used so early as the time of Hippocrates, and the skin being acrid, one or two of them will operate as a drastic purgative. The oil expressed from the seeds is, however, an excellent laxative, destitute of the baneful properties of the seeds themselves. It operates with great certainty, without

* It is known here more generally by the title of *Palma Christi*.

gripping or harshness, and is adapted to most cases in which a mild aperient is required, creating no tendency to subsequent constipation of the bowels.

By the physicians of the West Indies it was originally employed in colica pictonum, where the disease abounds, and its efficacy is too well attested to be doubted. I have, indeed, known it to open the bowels in other forms of colic, when powerful cathartics were resisted. Yet, we cannot always trust to it in obstinate constipation, or where copious evacuations are demanded. It will insinuate itself through the intestinal canal, bringing with it a small portion of the more fluid contents, leaving behind the collection of indurated fæces. Being prescribed under such circumstances, it should be after a dose of an active cathartic, and particularly calomel. Thus administered, it promotes purging, and mitigates the operation of the drastic medicine.

Castor oil is much employed in dysentery and other inflammatory states of the bowels. It is supposed to be peculiarly adapted to these cases, as, passing through the whole extent of the alimentary canal without any sensible change, it sheathes the surface of the intestines, while it removes offensive matters. The quantity of oil, however is too small to answer such purpose. In ordinary cases of dysentery it may be serviceable. But, as the disease occurs in warm climates, with hepatic derangements particularly, it must give place to calomel. When, however, there is tormina, or tenesmus, I have used advantageously the

annexed preparation.* To cholera infantum, the oil is supposed to be not less suited. It is given in the beginning of an attack to evacuate the bowels, and subsequently in smaller doses. This complaint, however, being usually attended by nausea and acidity, I have found it more beneficially administered in the following shape.† Yet calomel, here, is generally to be preferred. The oil is, moreover, recommended in hæmorrhoids—in puerperal women—in nearly all the diseases of children—and after surgical operations. The dose of it for an adult is an ounce, and for an infant a tea-spoon full even at birth.

Being an unpleasant medicine to most persons, several means have been suggested to obviate this inconvenience. It is sometimes taken in ardent spirit. This vehicle, however, is obviously improper in many cases. The French take it in coffee. Mixed with a strong infusion of senna, in the proportion of three parts to one, it is said to be far less nauseous, and sits more comfortably on the stomach. An emulsion made with the yelk of an egg, and cinnamon or mint water, is not very disagreeable. On the whole, there is no better way, than by pouring it on a little sugar and water, which prevents its adhering to the sides

* R. Ol. ricin. ℥i. Pulv. Gum. Arab.—Sacch. alb. āā ℥i. Tinct. theb. gtt. xl. Aq. menth. ℥iv. m. This is called *oleaginous mixture*, and remains on the stomach much better than the pure oil. The dose is a table-spoonful, to be repeated.

† R. Ol. ricin. ℥i. Sacch. alb. ℥i. Album ovi: m. adde gradatim, Aq. calcis. ℥v. Tinct. theb. gtt. xx. m.

of the glass, and both before and after swallowing it to rinse the mouth with rum or brandy.

OLIVÆ OLEUM.

In many of its leading properties, olive oil is similar to the last medicine. It is very mild, very quick, and a very certain laxative. I know not of any property which it does not possess in common with castor oil, except perhaps its activity. It may be administered in all cases where the former is useful, and, probably, with nearly equal advantage. Being less offensive, it has, indeed, in this respect, a superiority.

The objection which I have heard made against the olive oil in inflammatory cases, that it is digested, and therefore increases the quantity of circulating fluids, is wholly unfounded. Given in such a dose as to purge, it passes through the bowels like castor oil, and not more changed. The fact is, that in all acute affections of the alimentary canal, the process of digestion becomes nearly suspended, and whatever is received into the stomach, even the nutritious mucilages, are so little acted upon, that the latter are expressly directed to "blunt acrimony, and sheathe the delicate surface of the intestines." The dose is the same as castor oil.*†

* As a substitute for each of the above articles, the oil of butter may, on some occasions, be employed. It has often been prescribed, when

† Nine grains of the resin of jalap, three of Venetian soap, with an

SULPHUR.

The sulphur of commerce is the product of volcanoes, in Italy, or is dug out of the mines of Germany, Sweden, and Hungary. It has been found perfectly pure, though the more ordinary state in which it is met with, is that of adulteration with various extraneous matters. By the process of sublimation, it is purified, forming the *flores sulphuris*. Melted, and run into cylindrical moulds, it is called roll brimstone, which is not so pure—and therefore less prescribed. But, by exposure to the air, or in the sublimation of it, the former preparation sometimes acquires a degree of acidity, which renders its operation very harsh, and the washed sulphur* is preferred. To obviate the same inconvenience, sulphur may be precipitated from a state of solution in an alkali by an acid, forming the *lac sulphuris*,† which becomes white, owing to the presence of a small portion of water.

acid matters have been taken into the stomach, and is exceedingly beneficial in inflamed states of the bowels, as in dysentery, &c. It is worthy of recollection as a fact of some practical importance, that the animal are much less irritating than the vegetable oils.

ounce and a half of olive oil, well triturated, form the emulsion of Vogel, which, in the dose of a table-spoonful, occasionally repeated, is said to be highly useful in dysentery.

* Sulphur Lotum.

† Sulphur Precipitatum.

The action of sulphur is principally on the great intestines, and, on this account, as well as from its mildness, is employed in hæmorrhoidal affections, habitual costiveness, &c.

In gout and rheumatism, it has acquired considerable repute. When the former of these diseases attacks the alimentary canal, with flatulence, and spasmodic uneasiness, it is undoubtedly often serviceable. I have not tried it in any other forms of gout, though it has been much used to evacuate the bowels in the regular disease. But in rheumatism I have prescribed it much, and certainly with advantage. To the chronic states of the disease, attended with pain, it is the best suited. I have generally directed it in such doses as to keep the bowels, at least in a laxative condition, though it also operates by exciting perspiration. It is by this twofold property that it probably does good in these cases, as well as in a variety of other diseases.

By the German writers, a good deal has been said of its utility as a purge, in dysentery. As, however, their practice was never imitated to any extent, and is now nearly repudiated, I presume it had no very solid claims to attention. Yet, in dysentery, of that species which partakes of the character of rheumatism, or catarrh, it might perhaps be applied with advantage, though this is mere conjecture, having no experience whatever with the medicine, under such circumstances.*

* Vid. Diaphoretics.

MAGNESIA.

This is a simple earth, found, for the most part, in a state of great impurity, from which it is cleared by certain chemical processes. It was introduced into the materia medica, at the beginning of the last century, by Count de Palma, at Rome, and continued, for a long time, a very lucrative secret. It scarcely, indeed, lost the character of a quack medicine, till it was prepared, about forty or fifty years ago, by Glass, an apothecary, at Oxford.

Magnesia usually exists as a carbonate. When administered in this state, if it meets with an acid in the stomach, a decomposition takes place, and sometimes a considerable quantity of carbonic acid is disengaged, which causes an uneasy distention, and the other symptoms of flatulence. It should, therefore, for use, be deprived of its fixed air by calcination. This is more necessary as regards children, with whom it is much employed, even within the month, and who sometimes suffer much from the neglect of this precaution.

Magnesia is a mild laxative. Combined with other substances, it becomes more active, as with cremor tartar, rhubarb, or Epsom salts. Equal portions of it and lac sulphuris,* form one of the most certain and

* Sulphur precipitatum.

lenient of our purgatives, admirably suited to remove a torpid state of the bowels. Magnesia, however, is mostly prescribed alone, to correct acidity, and, afterwards, to act as a purgative. It is, with this view, much given in gout,* in all the depraved states of the stomach, in the griping colics of infants, and other analogous affections. The annexed formula will be found useful in these latter cases.† What has been so long desiderated, an antidote for arsenic, is now probably found in magnesia. Mr. Hume, of London, has lately published two cases of poisoning from this article, of an apparently desperate character, which were cured by the following mixture.‡ As a purga-

* The following mixture is greatly extolled by Scudamore in gout, to be repeated two or three times a day.

R. Magnes. gr. xv a xx.

Magnes. sulph.

Acet. colchici. āā. ℥i ad ℥ij.

Aq. font. q. s. ft. haust.

It probably operates on the threefold principle of a purgative, diuretic, and antacid.

† R. Magnes. calc. gr. xxx., Pulv. rhei. gr. vi., Sacch. alb. ℥i., Ol. anis. gtt. iii., Tinct. theb. gtt. iv., Aq. font. ℥iss. M. The dose a tea-spoonful.

There are several nostrums much used, into which magnesia enters largely. Of these, the most popular is *Dalby's Carminative*. This consists of carbonate of magnesia, two scruples—oil of peppermint, one drop—of nutmeg, two drops—of aniseed, three drops—of the tincture of castor, thirty drops—of asafœtida, fifteen drops—of the spirit of pennyroyal, fifteen drops—of the compound tincture of cardamom, thirty drops—and of peppermint water, two ounces.

Paris's Pharmacologia.

‡ R. Magnes. carbonatis, ℥i.

Aquæ distillatæ, ℥xv.

Vini opii, ℥iss.

tive, the dose of magnesia is two or three drachms, mixed in water or milk.

In conclusion, it may be right to state, that the long and free use of magnesia is sometimes productive of very serious consequences. Two cases are recorded by Mr. Brand, in which concretions of it were formed in the bowels, one of which weighed from four to six pounds, causing all the uneasiness of obstructed bowels, and, finally, death.*†

CARBO VEGETALIBIS ‡

VEL

CARBO LIGNI.

This article, on account of its antiseptic properties, has long been used for a variety of purposes in domestic economy. Excepting, however, its external application as a poultice to ulcers, to correct their odour, or to arrest the progress of mortification, no

Sp. lavend. comp., ʒiij.

Sacch. albi, ʒss.

Of this two table-spoonfuls are to be frequently given, previously shaking the vial.

London Medical and Physical Journal for 1821, p. 466.

* Journal of Science and Arts, Vol. VI.

† *Incompatible substances.*—Acids, and acidulous salts—alkalies, and neutral salts—alum—cream of tartar—nitrate of silver—acetate of mercury—oxy-muriate of mercury—super-acetate of lead—sulphates of zinc, copper, and iron.

‡ Parr's Medical Dictionary.

great use was made of it in the practice of medicine or surgery. It is true, that, during the reign of the pneumatic pathology, it was proposed, and perhaps employed, as a means to rob the system of an excess of oxygen, which was presumed to cause certain diseases.

Reasoning on its general properties, I was induced, several years ago, to administer it internally, in a case of ulcerated fauces and tongue, accompanied with very foetid breath, which I suspected to arise from a morbid state of the stomach. After a few trials, I had the satisfaction to find, that the fœtor was corrected, the ulcers improved, and, by perseverance in its use, a cure was ultimately effected. I have since been much in the habit of employing it, in all chronic ulcers of the throat, where I supposed them to be owing to the same cause, and often with advantage. Encouraged, also, by what I had observed of its effects, in removing offensiveness of the breath, in some of the preceding cases, I have since, and with not less success, prescribed it with the same view, where this existed, independently of ulceration. The odour, under such circumstances, I am satisfied, is a foul exhalation, from a depraved condition of stomach, and does not proceed from diseased lungs, as is commonly supposed. The power of charcoal, in destroying the odour of substances, is very peculiar, and I do not think has hitherto been well explained. Even medicines placed near it, are deprived, it is

said, of this property, and more particularly valerian, galbanum, balsam of Peru, and musk.

In dyspepsia, with cardialgia and pyrosis more particularly, this article is productive of utility, and is calculated, as has recently been reported, to check the violent vomitings incident to bilious and yellow fever.

Charcoal, in the dose of a table spoonful twice a day, which is my mode of exhibiting it, opens the bowels gently, and seems to be well calculated to obviate costiveness. It may, therefore, be placed among the milder purgatives, though it has claims to be considered in another light. Certain I am, that it is a substance of more extensive utility, and may hereafter become an important accession to the *materia medica*.*†

SALES NEUTRI,

OR

NEUTRAL SALTS.

The neutral salts are a very valuable class of evacuates, and, though there is a considerable number of

* Vid. Tonics.

† In the fifth volume of the Philadelphia Medical Journal will be found an interesting communication from my friend Dr. Daniell, of Savannah, on the use of this medicine in obstinate constipation of the bowels. He gives from one to three table-spoonsful of it every half hour, and declares that it is far more effectual than the usual practice. Even when it does not promptly cure the disease, it appeases the irritability of the stomach, lulls pain, and checks nausea and vomiting.

them, they are so uniform in their properties, and so familiar in their use, that little occasion exists to enter into any details on the subject. They are all given nearly in the same quantity, which is about an ounce dissolved in water, and are considered as occupying, in point of force, an intermediate space between the laxatives and cathartics. Each has also the peculiarity of operating in a smaller dose, on repetition—and of producing copious watery evacuations, by the strong impression made on the exhalents of the intestines. As they relieve the bowels freely, without much excitement, either locally or generally, they are usually resorted to when a phlogistic diathesis prevails. If, however, a thorough evacuation of the contents of the alimentary canal, or a sudden reduction of the excitement of the system, be demanded, as mostly happens at the commencement of bilious fevers, these saline laxatives must give way to the mercurial combinations. But, such effect being produced, they are well calculated to keep down action, to preserve the bowels in a soluble state, and may be so combined with antimonials as to act on the surface, and to fulfil other indications.*

* The following prescription is much used in the second stages of our bilious fevers :

R. Sulph. Sod. vel. Magnes. \mathfrak{z} i.

Antim. Tart. gr. i,

Aq. font. ferv. \mathfrak{z} iiiss.

Ft. solut.

Adde

Succin. Limon. recent. \mathfrak{z} ss,

M.

The dose, a table-spoonful every hour.

Of this assortment of medicines, the vitriolated natron, Glauber salt, or sulphate of soda, in some respects, is to be preferred. It has the leading properties of the rest, and is distinguished by rather more activity and certainty of operation. It should, however, be recollected, that in a state of efflorescence, by the loss of its water of crystallization, one half of the weight suffices for a dose. By the addition of a small portion of cremor tartar, the Glauber salt is rendered more active, as well as less unpalatable, and by a combination with emetic tartar, it, in common with all the neutral salts, has the purgative power vastly increased.

The same effect is in part attained by being freely diluted, operating in this state in much less quantity, and also by a mixture of several of them, as we see particularly illustrated in the purgative mineral waters, which, though thorough evacuants, contain very minute portions of any one active ingredient.*

The next of the saline laxatives is the sulphate of magnesia. It was once known by the title of bitter purging salt, vitriolated magnesia, and still more by that of Epsom salt, from the name of the place at which it was originally manufactured. Excepting that it is more apt to be retained, I do not know that it has any superiority. On this account, it has been recommended in colica pictonum, in dysentery, in

* *Incompatible substances.*—Muriates of ammonia, baryta, and lime—nitrate of silver—sub-acetate and super-acetate of lead.

cholera morbus, in gastritis, enteritis, and other complaints attended with great gastric irritability. That it will lie on the stomach, when most other articles are rejected I have sometimes seen, and particularly in cholera infantum. Two drachms of it, with one of calcined magnesia, prove an active, certain, and valuable purgative, well adapted to our bilious fevers, and other autumnal complaints, when its use is preceded by a dose of calomel.*

The tartrate of potash and soda, the sal. Rupellensis, or Rochelle salt, is only recommended by the circumstance of its being less nauseous. It is now generally given, dissolved in Seltzer water, and, in this way, is neither unpleasant to the taste, nor offensive to the stomach.

Of the vitriolated tartar, sal de duobus, or sulphate of potash, I have as little to say. It is seldom used, and seems to be less estimated as a laxative, than any of the neutral salts, though it still retains some reputation as a deobstruent. When prescribed as an evacuant, it is in the dose of a drachm or two, united to jalap or rhubarb, or some other vegetable purgative.

* *Incompatible Substances.*—The same as the preceding article. The fixed alkalies and their carbonates, moreover, precipitate from it magnesia and its carbonate. Phosphate of soda occasions no immediate precipitate, unless ammonia be present, in which case the triple ammoniac, magnesian phosphate will be produced. The addition of ammonia, which, in the form of sp. ammon. aromat. is not unfrequently prescribed, in conjunction with a solution of this sulphate, forms also a triple salt, and a portion of magnesia is precipitated. Whenever, therefore, this ammoniacal stimulant is ordered with a purgative salt, the scientific physician will prefer a solution of the sulphate of soda.

Even in this way we see little of it in practice. Being very insoluble and hard, it is an eligible substance for triturating and dividing powders.

The *sal polychrest* of the old chemists, which is a sulphuret, as well as a sulphate of potash, though to be found in some of the foreign pharmacopœiæ, has no claims to further notice.*

The phosphate of soda is comparatively a new medicine. Like the preceding salts, it is a mild purgative, and certainly less disagreeable. Yet I doubt whether it be so active, or calculated to meet several important indications. It seems to be not so laxative in its effects, and produces an intolerable degree of thirst, with uncomfortable sensations about the stomach. It may be exhibited in solution in water, in soup, or gruel made without salt. Being similar to the muriate of soda in taste, it answers here as a substitute.

The soluble tartar and cream tartar, the tartrate and supertartrate of potash, I shall defer noticing in detail, till I come to the history of diuretics.

There are two other saline purgatives, which, though not in general use, I have found sometimes convenient. The formulæ for the preparation of these will be found below.†

* *Incompatible substances.*—The sulphate of potash, in solution, is entirely decomposed by lime and its compounds—by oxy-muriate of mercury—nitrate of silver, and by sub-acetate, and super-acetate of lead.

† Cheltenham salt, the name by which the first of these preparations is vended, is formed by triturating together, in the following proportions;

HYDRARGYRI SUB-MURIAS,

VULGO

HYDRARGYRUS MURIATUS MITIS.*

Of all the purgatives, this is the most important, and which is susceptible of the widest application

R. Sod : Sulph : ʒii .
 Magnes : Sulph : gr. lxxvi .
 Sod : Muriat : gr. x .
 Ferri Sulph. gr. ss .

This dose purges gently, and seldom offends the stomach.

The second is called *Patent Seidlitz Powders*. They consist of two distinct powders, which come to us wrapped up in different coloured papers. The one in *white* paper, contains two drachms of tartarised soda, and two scruples of carbonate of soda : that in *blue* paper, thirty-five grains of tartaric acid. The first is to be dissolved in a gill of water, to which the second is to be added, and the draught taken in the state of effervescence. The carbonic acid thus evolved, is grateful to the stomach, while the neutralized salt subsequently proves smartly purgative. That such a medicine should be serviceable in our bilious fevers, and other diseases attended with gastric disorder, is obvious.

* No article of the materia medica has probably received a greater variety of names than this preparation of mercury. In the "olden time," it was called draco mitigatus—aquila alba—aquila mitigata—manna metallorum—panchymagogum minerale—panchymagogus quercetanus—sublimatum dulce—mercurius dulcis sublimatus—calomelas, &c. It is now generally known by the title bestowed on it in the London Pharmacopœia—Hydrargyri—sub-murias. This, however, in common with, perhaps, all other designations proceeding from its supposed chemical composition, is objectionable. Being regarded as a

in the practice of physic. There is scarcely, indeed, any case in which purging is required, that it may not be so regulated, either alone, or in combination, as to meet the several indications. It has the singular property of imparting force to many of the mild, and moderating the severity of the drastic medicines. Whenever we wish a strong and permanent impression to be made on the alimentary canal itself, and through it on the neighbouring viscera, and especially the portal circulation, by general consent, it is consecrated to these purposes. It is hence chiefly relied on in fevers, especially bilious fevers—in obstructions of the bowels—in cholera, and is unquestionably the most appropriate purgative in the early stage of dysentery. Besides the superior efficacy of calomel as a purgative, it is recommended by the facility with which it is administered. Nearly devoid of taste and odour, and minute in dose, it will often be taken when other medicines are refused, and may be so disguised, as to be imposed on the most suspicious or unmanageable of our patients.

Calomel, on every account, seems to be peculiarly

compound of muriatic acid and oxyd of mercury, it is not a *sub-muriate*, but as much a muriate as a corrosive sublimate. The only difference in the two cases, depends on the degree of oxidizement of mercury, which is at a *minimum* in calomel, and at a *maximum* in sublimate. Conformably to the new views respecting chlorine, calomel must consist of one proportional of chlorine, with one proportional of metal, and is, therefore, a *chloride of mercury*. It is called *proto-chloruretum hydrargyri*, in the Codex Med. Paris.

Vid. Paris's Pharmacologia.

adapted to most of the cases of children. Whether we wish to relieve actual disease, or merely to evacuate the contents of the bowels, it operates leniently and efficaciously. Yet, by many, it is supposed to be a very violent purgative, and, hence, there is a sort of popular prejudice against its use in the complaints of children, an error, which leads to so much mischief, that we ought to unite to remove it. From an extensive experience with the medicine, I am convinced, that, in those cases, its action is incomparably milder than in more advanced life. To infants of only a few days old, I have given it, and witnessed no harsh effects from it. Yet it is not always required, and the common laxatives, in many instances, may be substituted.

The dose of calomel for an adult, when taken alone, is from ten to twenty grains. We commit a mistake, when we wish promptly to purge, in giving too small a quantity of it. Employed largely, it also is less irritating to the *primæ viæ*. I have known a drachm to be taken at a time without inconvenience, though such an enormous dose can scarcely ever be expedient.*

Yet it deserves to be recollected, that in some in-

* What renders this medicine occasionally harsh in its effects, I suspect, is a mixture of some portion of corrosive sublimate. There is, sometimes, in the preparation of it, great carelessness. It is easy to detect such vitiation by boiling the suspected sample with a small portion of muriate of ammonia, in distilled water, and adding carbonate of potash, when a precipitation will take place. Calomel ought also, when rubbed with pure ammonia, to become intensely black, and to exhibit no traces of an orange hue.

stances, owing to certain peculiarities of condition, when in the ordinary dose it proves inert, a grain or two will purge actively. Nor can I forbear to repeat, what I believe has been elsewhere mentioned, that thoroughly to unload congested viscera, and especially the hepatic apparatus, we shall attain the end more effectually by exhibiting it in small and repeated doses than otherwise, provided after a certain quantity is accumulated, we resort to castor oil, or some other article of nearly similar properties. The dose, however, must not be less than two or three grains. Exhibited in very minute quantities, as the half, or fourth, or eighth of a grain, it restrains the action of the *primæ viæ*, by quieting morbid irritability, as will hereafter be illustrated when we reach the consideration of its specific effects.*†

* *Incompatible substances*.—Alkalies and lime water decompose it and turn it black, by precipitating the black oxyd of the metal. It is also decomposed by soaps—sulphurets of potash and antimony—and by iron, lead, and copper—hence it is improper to employ any metallic mortar for dispensing medicines which contain it. There seems to be reason for supposing, that this preparation may undergo decomposition *in transitu*, and that, therefore, some substances may be *chemically*, and yet not *medicinally* incompatible with it. If calomel be boiled, for a few minutes, in distilled water, to which alcoholized potash has been added, it is completely decomposed, a *muriate of potash*, and a *black oxyd of mercury*, being the new products.

† Vid. Sialogogues.

RHEUM PALMATUM.

The root, the only part of this plant used, is brought from China,* and also from Siberia, by the way of Russia. Being imported from the Levant, the latter has obtained the name of Turkey rhubarb, and is of a superior quality. It comes in small pieces, of a bright yellow colour, having a smell somewhat aromatic, and a bitter, approaching to a styptic taste. The Chinese is in larger and more cylindrical shapes, of a paler appearance, harder and more ligneous in its texture, with less of the sensible qualities. The rhubarb is now cultivated in the different districts of Europe, and within a short period in our own country.

Combining the purgative with the property of astringency, it differs from almost every other article of the same class in this respect, that, while it purges, it increases, instead of lessening the tone of the alimentary canal. It has also this further peculiarity, that, however combined with opium, its operation on the bowels is not at all restrained: and, hence, it is invaluable in cases where a necessity for purging is connected with so much pain, as to demand the interposition of opiates. Of the accuracy of this observa-

* It has been supposed, that the Chinese rhubarb is afforded by a distinct species of the plant, the *Rheum Undulatum*. But this is now contradicted. The difference in the kinds, it is alleged, is owing entirely to the culture and modes of preparation.

tion, which, so far as I know, is original, I cannot permit myself to doubt, having confirmed it by ample experience. Combined with calomel, rhubarb is not a little prescribed in our autumnal fevers, and is as useful in the early stages of dysentery, with accumulations of bile, or hepatic engorgement. It was in this disease one of the favourite purgatives of Sydenham. Evacuations having been premised, it may, in conjunction with ipecacuanha and opium, be directed at a later period, to relieve tormina and tenesmus.*

Diarrhœa is treated nearly in the same way. The rhubarb is at first given as an evacuant, and subsequently in minute doses, with a view to its astringent and tonic effect, sometimes alone, though much oftener with the articles just mentioned. But still more is it resorted to, in the chronic complaints of the stomach, no medicine having been found to answer better, in the several forms of dyspepsia, and in the affections symptomatic of it.†

Considerable confidence is reposed in the powers of

* R. Pulv. rhei. gr. xx. Ipecac. gr. x. Gum opii, gr. iii. Ol. cinnam. gtt. v. Gum Arab. q. s. ft. mass. Div. in pil. x. One of which to be given every two or three hours.

† Connected with atonic gout, there is a depraved state of the alimentary canal, producing flatulence, sour eructations, and spasmodic uneasiness, more or less severe, to relieve which, Warner's cordial, a preparation into which rhubarb enters largely, proves very effectual. It is made as follows:

Take of Rhubarb bruised 1 oz. Senna $\frac{1}{2}$ oz. Saffron 1 dr. Fennel seed and coriander seed, each 2 dr. Powdered liquorice 4 dr. Raisins pounded 1 lb. Brandy 3 pints. To be digested for a week. The dose is half a wine glass full.

rhubarb in hepatic congestions and obstructions. As a purgative, it unquestionably does good in many of these cases, though its efficacy may be increased by adding calomel to it. The liver having been strongly impressed by this active purgative, or by the action of an emetic, a favourite prescription of many, consists of rhubarb, aloes, and Castile soap, in equal parts, made into pills, to be so given as to keep the bowels in a soluble state. To the cases of children, few medicines are better suited than rhubarb. It is taken with tolerable facility, and operates so gently, that it may be prescribed at a very early period of life, and under almost every circumstance of their diseases.

As rhubarb readily yields its virtues to water, proof spirit, and wine, these menstrua are employed to form a variety of preparations, of which the officinal will be found in the dispensatories. As some of these are neat and efficacious, they are worthy of attention.*

* While on this subject, I will mention a domestic preparation of rhubarb, in very general use, of which the formula cannot be procured in books. It is called the *spiced rhubarb*: and there are two modes of making it, one with water, and another with spirit.

R. Rad. rhei. ℥ i. Cort. cinnam. ℥ ii. Nux Mosch. ℥ i. Caryophyll. ℥ss. Sacch. alb. ℥ vj. Sp. cinnam. ℔ ij To be put into a deep dish, and burnt out.

R. Rad. rhei. Cort. cinnam. Macis, āā ℥ii. Aq. font. ℔ ij. To be simmered away till half evaporated, and then add sugar and brandy enough to preserve it from becoming sour. Exhibited in divided doses, this medicine is sometimes useful in the second stage of most of the bowel affections, especially of children.

The *rhubarb tea*, is also a useful preparation in the cholic of children, and, under all circumstances, to remove flatulence. It is made by in-

The dose of rhubarb, as a purgative, is from twenty to forty grains.*

CONVOLVULUS JALAPA.

This plant, a native of Mexico, is found most abundantly near the city of Xalapa, from whence its name is derived. It has also been discovered near Vera Cruz, and in the south of Florida. The root, which only is used in medicine, is brought in transverse slices, solid, hard, and heavy, of a dark gray colour, and striated texture—having little smell, and scarcely any taste. When swallowed, however, it affects the throat with some slight pungency. This is a very powerful purgative, its activity residing principally, if not wholly, in the resin, which, even in small doses, gripes. The gummy part bears an inconsiderable proportion to the resinous, and is found to have little or no effect on the bowels, though, as a diuretic, it is said to be active. This is an opinion which has long been received on the subject. But recent

fusing a drachm of the powder in four ounces of boiling water, and, after it becomes cool, adding sugar and nutmeg.

* *Incompatible substances.*—The salt of iron strikes a *black* with its infusion. By the alkalies, alkaline earths, or neutral salts, its colour is changed to red, and it is rendered more quick and mild as a purgative, though its astringency is destroyed. It may not be altogether out of place, here, also, to mention, that, by *toasting* or *torrefying* rhubarb, we add to its astringency, though, in the same proportion, we diminish its purgative powers.

experiments go to show, that the distinction in these two constituents of the medicine, is not well founded.

Being one of the most active of the cathartics, jalap is much used in the commencement of bilious fevers. Combined with calomel, in the dose of ten grains each, it was the purge which came to be generally employed in the yellow fever of this city, while the disease was considered highly bilious. As a hydragogue, it had formerly an unrivalled reputation, so much so, indeed, that it was distinguished by the appellation of *panacea hydropicorum*. It is entitled to much of the praise lavished upon it in dropsy. Yet, I believe, with cremor tartar it does still better. Ten grains of the one, with a drachm of the other, constitute one of the best medicines which I have ever tried, as well in dropsical, as in all other cases, where long continued purging is demanded.

The dose of jalap alone is from twenty to forty grains. Triturated with the crystals of tartar, it operates in smaller doses, and without harshness, which is also the case, we are told, with ipecacuanha.*

The fact is, that with most of the vegetable articles, their purgative power is quickened as well as rendered milder by the addition of any emetic substance.

* Vid. Aikin's Mat. Med.

ALOE PERFOLIATA.

Of a plant, which grows in the south of Europe, in Asia, Africa, and America, the aloes of the shops are the inspissated juice. Three varieties of the medicine are vended, the socotorine, the hepatic, or Barbadoes, and the caballine, or horse aloes. The first is preferred, and the last is only admitted into veterinary practice. As yet, the species of plants producing these different sorts of the article, have not been clearly determined. It seems, however, probable, that the socotorine is afforded by the aloe perfoliata, and the Barbadoes and caballine, either by the aloe spicata, or aloe vulgaris.

Aloes is a warm stimulating purgative, passing through the stomach and small intestines without making much impression, though operating with some force on the lower part of the alimentary canal, and especially the rectum. It is, on this account, when employed for any length of time, apt to produce hemorrhoids, or, if they exist, to increase the pain and irritation of these tumours. This medicine ought therefore to be avoided by persons subject to these, or any other affections of the lower intestines.* It is

* I have lately heard, that it is the practice of an eminent surgeon in London, to employ aloes as a cure for hemorrhoids. Whether this proceeds from a vulgar affectation of singularity, or that the article really does good, on a principle that a remedy is sometimes found in the cause of a disease, I shall not attempt to decide.

supposed also strongly to excite the uterus, and hence forbidden in pregnancy. But, for this very reason, it proves exceedingly useful in amenorrhœa, and enters into the composition of several of the nostrums which have reputation as emmenagogues.

The older physicians believed, that it had some of the qualities of bile, perhaps from its intense bitterness, and that, when there is a deficiency of that fluid, it might be prescribed as a substitute. I know not how far this hypothesis is well founded. Certain it is, however, that it has in a great degree the power of promoting the peristaltic motion, and hence its utility in habitual costiveness.*

The precise dose of aloes is not well determined. Cullen says, that he has known instances of persons who very constantly were purged by from one or two grains, and it is equally remarkable, that, though the dose be increased to ten times the quantity, the effect is nearly the same. This observation being correct, we are taught, that though few medicines are more fit to open the bowels, it is unsuited for copious purging. But it is not true, that the effect is not increased by a large dose. Ten grains of it will operate with some activity. Cullen, also, seems to think, that nothing is gained by mixing aloes with other articles, and is particularly opposed to their union with the drastic purgatives. His objections are evidently more the re-

* Combined with assafœtida and myrrh, aloes forms a pill, very useful in some of the atonic shapes of dyspepsia, and, especially, in delicate women, and aged persons.

sult of speculation than actual experience, and deserve little weight, being wholly unsupported too by the observations of any one else, which, indeed, is so little the case, that aloes, with hardly an exception, is never employed alone. It has been the practice, ever since its introduction into use, to torture it by every species of combination, and it now enters into an uncommonly large number of preparations. Whether, in every instance, its efficacy has been improved, I am not prepared to say, though there can be no question, that when calomel, or rhubarb, or scammony, gamboge, &c. is added, its activity is considerably promoted. Different modes are adopted for its exhibition. But the form of pill is to be preferred in most cases, on account of the extreme bitterness of the article.*

* Besides the officinal preparations, we have the following pills, which are a good deal employed, the whole of which have aloes as a basis.

1. *Anderson's Pills.* These consist of aloes, with a proportion of jalap and oil of aniseed.

2. *Hooper's Pills.* These consist of aloes, myrrh, sulphate of iron, and Canella bark.

3. *Dixon's Antibilious Pills.* These consist of aloes, scammony, rhubarb, and tartarised antimony.

4. *Dinner Pills.* These, which are also called Lady Webster's or Lady Crespiny's Pills, are the "*Pilulæ Stomachicæ*," or "*Pilulæ ante cibum*," and are made agreeably to the following formula:

R. Aloes opt. ʒvj.

Mastich.

Rhub. āā ʒij.

Syrup. de Absinth. q. s. ft. mass. et div. in pilul.

These pills produce promptly, a very large, free, and copious evacuation—and, as one of their titles would seem to indicate, are well calcu-

CASSIA SENNA.

This is a plant which grows in Turkey, Syria, and Persia. It is commonly called Senna Alexandriana, because it was once exclusively imported from the city of Alexandria, in Egypt. We have some inferior kinds derived from Italy, the Barbary states, and the West Indies—probably, the same plant degenerated by cultivation in a less genial soil and climate.* The senna, one of the medicines originally received from the Arabians, is a useful purgative, distinguished by the activity and certainty of its operation, and lies well on the stomach, though apt to gripe when given by itself. This is, however, in part obviated by moderately infusing the leaves in a large quantity of water, and may be further counteracted, by adding some of the carminatives, as coriander or fennel seed. Cardamoms, or ginger, as well as liquorice, has the same

lated to prepare the stomach of the glutton and debauchee for renewed excesses.

* We are told by Dr. Paris, in his Pharmacologia, that the senna from Alexandria is much adulterated by the merchants of Cairo, with the leaves of the *Cynanchum Oleaefolium*, and with those of the *Colutea Arborescens*, and that from Tripoli still more by the *Cynanchum*. On this point there is some confusion. As well as I recollect, for I cannot now consult the paper, it is stated by one of the botanists of France, who, some years ago, visited Egypt, that the *Cynanchum* is a genuine Senna, and furnishes the article of the best quality.

effect. The *oxydised extractive matter* being the principle causing griping, the best corrective, on the whole, will be found in an addition of a small portion of one of the fixed alkalies, or some of their salts, and the soluble tartar especially. By infusing senna with common black tea, its taste is much improved.

At present, senna is rarely prescribed in substance, the dose being both bulky and disagreeable. It, however, yields its virtues readily to water, though we should, in preparing the infusion, carefully avoid its boiling, as the volatile parts of the leaves, in which reside the more active properties, are evaporated. Nor is it less important to use a covered vessel, since, by exposure to the air, such is the strong affinity of the extractive matter for oxygen, that it becomes *oxydised*, and, consequently, gripes. No more, for the same reason, should be prepared than is wanted for immediate use. By standing for a few hours only, it undergoes the same change, deposits a yellow precipitate, loses its purgative quality, and distresses the bowels.

The senna is commonly directed with manna, the Epsom or glauber salts, or cremor tartar, and sometimes, with all three ingredients.* It is useful in

* An infusion, prepared with two drachms of it, and one of gentian, to a pint of water, operates well, and is particularly calculated to remove accumulations in the duodenum, a case of more frequent occurrence than generally suspected, producing oppression, and other inconveniences, usually referred to the stomach.

obstructed bowels, and, indeed, whenever we require a searching and active evacuant.*†

CASSIA MARILANDICA.

As its name imports, this is a plant of our own country. It is very abundant in different parts of the United States, and possesses nearly the same virtues as the foreign senna, being of the same genus. As a substitute for the officinal, I am informed that it is much used by country practitioners. The dose and mode of preparation are the same. From what I can learn, this article is well worthy of further examination.

PODOPHYLLUM PELTATUM.

Every section of the United States furnishes this plant, which is designated by several provincial names, as mandrake, ipecacuanha, May apple, &c. To the New World, this species of podophyllum, I believe, is restricted, and is one of those vegetables, the several parts of which are possessed of different properties,

* *Selway's prepared essence of senna*.—This is a concentrated infusion of senna in combination with an alkali.

Paris's Pharmacologia.

† *Incompatible substances*.—The infusion is disturbed by strong acids—lime water—nitrate of silver—oxy-muriate of mercury—super-acetate of lead—tartarised antimony—and by an infusion of yellow cinchona.

the fruit being esculent, the leaves poisonous, and the root highly medicinal.

My experience with this article is not extensive, though I have seen enough of its effects to persuade me, that it is not without claims to notice. As a purgative, it resembles jalap, and I think, in a similar dose, it is scarcely less active or effectual. Like that medicine, also, its powers are heightened by a union with calomel, and, in bilious cases especially, ought not to be prescribed without it. As a remedy in intermittent fever, it is said to be useful, independently of its purgative property, of which I know nothing myself.

The proper season for collecting the root, is late in the fall, when the foliage begins to drop. Gathered in the spring, it is comparatively inert.

JUGLANS CINÈREA,*

VEL

JUGLANS CATHARTICA.†

Of all our indigenous cathartics, I suspect the butter nut, or white walnut, affords the most valuable. An extract made from the inner bark, had long been used as a popular purgative. During our revolution-

* Linnæus.

† Michaux.

ary war, when drugs became scarce, the medical men of the army employed it as a substitute for the medicines of the shops. On their authority, it has since been introduced more generally into practice. In the dose of from ten to twenty grains, it operates well, evacuating thoroughly the bowels, and is much resorted to as a purge in all bilious cases. But its efficacy may be increased by the addition of calomel. The extract should be made about the month of June, as the bark is, at this, considerably more powerful, than at other periods. There is a of syrup it to be found in the shops, much prescribed in jaundice.

CONVOLVULUS SCAMMONIA.

This is a plant of Asiatic Turkey and the neighbouring countries, and probably elsewhere. From an incision made in the root, issues a milky fluid, which, by inspissation, becomes concrete, and constitutes the scammony of the shops. The best of this article is imported from Aleppo, in light, spongy masses, of a shining blackish colour, having a faint, unpleasant smell, and a bitterish, pungent taste, consisting of a resin and a gum, in nearly equal proportions.

The Greek and Arabian physicians employed scammony as a purgative. They also used it externally in the discussion of tumours, and as a wash in tinea capitis, and other chronic eruptions. By Boerhaave it was

greatly commended for the first purpose, and, since his time, has been considered a safe medicine. Yet it is very harsh in its operation, and is now little prescribed, except in combination with articles which temper its effects. Its violence, it would appear, however, depends much on the state of the alimentary canal. The intestines being lined with an excess of mucus, we are told, it passes through without irritation, whereas, in their natural condition, and, still more, if the mucus be defective, it gripes severely, and, sometimes, even excites inflammation. Ganbuis tells us, "*Scammoneum acidi commixtio reddit inertius: alcali fixum, contra adjuvat.*" This, however, is not true. Its medicinal virtues are affected neither by acids nor alkalies. The common dose of scammony is from five to ten grains.*

STALAGMITIS GAMBOGIODES.

Gamboge is a gummy, resinous concrete, brought from the East Indies. It was formerly supposed to be the product of a tree, called, in the oriental language, *Coddam Pulli*. It is now better ascertained to be the stalagmitis, though the accuracy even of this statement is questioned. It is not, indeed, precisely known from which of several trees, named by writers, we derive it. It is denominated gamboge, from the country whence it comes. As received here, it

* The genuine scammony plant, I have understood, has been discovered in New Jersey.

is in large flakes or rolls, of a deep yellow colour, with no smell, and very little taste.

Exhibited in a large dose, it operates violently, both as an emetic and cathartic. It was, on this account, used in the yellow fever of this city, in cases, in which it was deemed, at one time, expedient to excite an artificial cholera morbus. But, in smaller doses, it acts with sufficient mildness. It is, indeed, declared by Ferriar, to be "one of the gentlest, most certain, and least nauseous laxatives of the *materia medica*." Combined with calomel, jalap, and aloes, it proves a most powerful evacuant of bile. No medicine, perhaps, in some bilious fevers, is to be preferred to it.

Like other drastic cathartics, gamboge has also been celebrated for its efficacy in dropsies. It is employed alone, and in connection with other articles. Too much can scarcely be said of it as a hydragogue. On the old practice of treating gout by the drastic purgatives, I have already expatiated. During the period when this system prevailed, such was the reputation of gamboge, that it came to be distinguished by the appellation of "*gutta ad podagram*."*

Lately it has acquired some reputation as a purge in dysentery, and, though its use seems to be forbidden on theoretical principles, it may agreeably disappoint us in actual practice. As much as any article does, it induces watery effusions from the intestinal exhalants, and, in this way, the vessels might possibly be so relieved, as to put an end to the state of

* Hill's *Mat. Med.*

inflammation. The ordinary dose of gamboge is two or three grains, to be repeated at short intervals, where full purging is required.*

HELLEBORUS NIGER.

The black hellebore is also known by the title of *melampodium*. Doubts have been entertained as to the origin of the latter appellation. The most obvious etymology is, from *Melampus*, one of the earliest of the Greek physicians, who, it is said, having observed its purging effect upon some goats feeding on it, introduced it into the *materia medica*.

By the ancients, hellebore was held in the highest estimation as a cathartic. It is especially extolled by Hippocrates, and his successors down to Galen, who seem to have considered it as the most valuable of this class. But when milder medicines of the same sort were brought into practice by the Arabians, and still more by the discovery of the New World, it came, in a great measure, to be superseded.

It was once supposed to be singularly useful in the diseases of the mind, particularly melancholia. The practice of antiquity, in this case, consisted, indeed, chiefly of purging with hellebore. It is somewhere recorded, that *Melampus*, to whom I have already alluded, acquired immense wealth and renown, by re-

* Vid. Anthelmintics, Diuretics.

storing to reason the daughters of an eastern monarch, of great dignity and power, who had all, from some cause, been deranged. The only article he employed was hellebore.

Notwithstanding the facts which might be collected in its favour, it is problematical, whether it is possessed of any peculiar powers in the mental affections. As formerly observed, in the treatment of many of these cases, there is no remedy entitled to greater confidence, than active, and even violent evacuations from the bowels. They will sometimes subdue the fiercest forms of mania, and as often awaken the sensibility of the system, in the lowest depression of melancholy. The more griping the purgative, under such circumstances, the greater its efficacy, and, on this account, hellebore, which is uncommonly severe in its operation, must, like the rest of the drastic cathartics, have done good. The powder of the root is used in the dose of ten grains.*

CUCUMIS COLOCYNTHIS.

Colocynth, or coloquintida, or bitter cucumber, is the produce of Syria, and some of the islands of the Grecian Archipelago. It is the soft pulp of the fruit, a species of gourd, dried, which constitutes the medicine. With little smell, it is so intensely bitter, as to be called *Fell Terræ*.

* Vid. *Emmenagogues*.

Colocynth is one of the oldest articles of the *materia medica*. To Hippocrates it was well known, and by him, not to mention other writers, it is described as a most active cathartic, pre-eminently endued with all the powers of a hydragogue, which is probable, from the copiousness of its purgation, every portion of the intestinal canal seeming to feel its impression, and particularly the exhalents of the surface. Besides having this property, it is alleged by the ancient authorities, to be highly beneficial in the affections of the head, whether acute or chronic, in obstructions of the viscera, and especially of the uterus—in epilepsy and similar complaints—and in the diseases of the skin. Whether, alone, it is calculated to be of much service in the preceding cases, I cannot speak from personal knowledge, having rarely given it by itself. When prescribed by me, it has been with the view to promote the operation of the slower cathartics, as aloe, rhubarb, calomel, &c. Combined with the last, especially, I have sometimes directed it in mania, in apoplexy, in coma, and palsy. To all these diseases, which are invariably attended with more or less torpor of the alimentary canal, it is suited. The dose of colocynth, in powder, is from four to six grains, and of the compound extract nearly the same, which is more generally directed. Externally applied, about the region of the navel, colocynth, it is said, displays all its purgative effects.

CUCUMIS AGRESTIS.

Elaterium is furnished by a plant, the cucumis agrestis of some, and the momordica elaterium of other botanists. The popular title is wild cucumber, so called from its analogy to the vegetable which bears the same name. It grows in several countries of Europe. Elaterium is the inspissated juice of the fruit, or the cucumber itself, previously pressed.* It comes to us in small thin cakes of a loose and friable texture, of a green colour, and bitter acrid taste.

The ancients were acquainted with its powers, and prescribed it freely, especially as a hydragogue. By the Greeks, it was termed *elaterion*, probably from the forcible manner in which it ejects the contents of the bowels, or, perhaps, as has been conjectured, from the juice shooting in different directions when the fruit is pressed. In its operation, it is harsh, griping, and irritating, to such an extent, as, occasionally, to produce inflammation of the intestines, and even bloody

* By Dr. Paris, we are told differently. "This substance," says he, "spontaneously subsides from the juice of the wild cucumber, in consequence, I presume, of one of those series of changes which vegetable matter is perpetually undergoing, though we are hitherto unable to express them by any known chemical law. It is, therefore, not an extract, either in the chemical or pharmaceutical acceptation of the term, nor an inspissated juice, nor is it a fecula, as it has been termed. The Dublin College has, perhaps, been most correct in simply calling it *Elaterrum*, the name given to it by Dioscorides."

discharges. The whole system, too, sometimes becomes highly stimulated, so much so, that the pulse, and other circumstances, indicate pretty considerable febrile action.

Concerning the dose there has been much uncertainty, owing to the various degrees of strength in which the article was met with. To secure greater uniformity in this respect, Clutterbuck has recently instituted a series of experiments, the results of which very satisfactorily prove, "that the active principle of this plant is neither lodged in the roots, leaves, flowers, or stalks, in any considerable quantity. Nor is it to be found in the body of the fruit itself, or in the seeds, but *in the juice around the seeds.*"

The substance which spontaneously subsides from this liquor, obtained without pressure, is genuine elaterium, the quantity of which contained in the fruit, is so extremely small, that only *six grains* were procured from *forty cucumbers*. To this active principle the name of *elatin* is now given, the dose of which is about the eighth or tenth of a grain. But of the common extract, when pure, half a grain.

Elaterium, I have said, was known to the ancients,* and, up to the period of the last century, it was still in the hands of some practitioners. By Sydenham, Lister, Hoffman, and all their cotemporaries and im-

* There is some obscurity on this point. It would seem, from a passage in Hippocrates, that he included under this title every purgative. Taking this to be true, we are furnished with an explanation of the otherwise irreconcilable accounts by the ancient writers of the properties and dose of the article.

mediate successors, it is strenuously recommended in dropsy. But, for various reasons, and particularly on account of its unpleasant effects, in many instances, it gradually lost ground, till finally it slipped altogether out of practice. We may form some idea of what are its effects when largely given, from the following declaration of a writer, who appears to have been conversant with its applications: "Elaterium esse in catalogo diaboli, quo necat homines," &c. Its use has been once more revived by Ferriar of Manchester, who lately published a series of cases illustrating its great powers in the several varieties of dropsy, and especially in hydrothorax.* What he has said, strongly as it is in favour of this medicine, seems to me fully warranted. As a hydragogue in atonic dropsy, it is eminently useful.

* This is the prescription of Ferriar :

R. Extract. Elaterii, gr. i.

Sp. æther. nitros. unc. ij.

Tinc. scill.

Oxymel. colchic. sing. unc. ss.

Syrup rhamni, unc. i.

Ft. solut.

Capt. drach. i. ex aquæ pauxillo, ter quater-ve in die

The following mixture I have found still more effectual.

R. Gambog. gr. iv.

Elatin. gr. ss.

Sp. nitr. dulc. ʒ iv.

Aq. font. ʒ iv.

M.

The dose is a table spoonful every two hours.

CROTON TIGLIUM.

As furnishing a most valuable cathartic, much attention has been directed lately to this plant. It is a native of India, and is said to belong to the same family as the *Ricinis Communis*. The seeds, as well as the oil expressed from them, are medicinal, and have been long used in that country. Nor were they unknown to Europe. Early in the last century, the *tiglium* seems, on the contrary, to have been used by many, and its properties are noticed by Linnæus, and various other writers. But, in the progress of time, we so completely lost sight of it, that when revived, it appeared as a novelty.*

The oil, the only preparation with which I am acquainted, has been much used by me, and in a variety of cases. As a hydragogue, I have found it prompt, and exceedingly efficient, producing copious watery evacuations, and, in some instances, very happily removing hydropic effusions. I have also employed it in most of the affections of the brain, as hydrocephalus, apoplexy, palsy, and mania, in each of which it generally succeeded well, so far as regards activity of purging. I have, moreover, given it advantageously

* For a full account of this article, vid. Mr. Iliff's paper, in the *Lond. Med. Repos.* No. 97, and that of Mr. Forst, in the same *Journal*, for July, 1822.

in constipation of the bowels from cholic, after copious venesection.

As the result of my own experience, I should say, that it is a highly important acquisition to the *materia medica*, and may be applied under nearly all circumstances, in which a powerful and certain purgative is demanded. Nor, as far as I have seen, is it very harsh in its operation, or apt either to gripe or nauseate distressingly. Being, however, exceedingly acrid, it is required in the administration, that the oil be so covered as not to act on the tongue and fauces. It may be made into pills with the crumb of bread or rhubarb, or blended with some syrup or mucilage, with a small portion of any of the essential oils, which, it is said, mitigate its effects. The average dose of the oil is one drop, to be repeated, when necessary, every two or three hours. But, in most cases of an ordinary nature, a single dose will suffice.*

* It appears that a very prompt and powerful impression is made on the nerves by this article. Cases of *tic douloureux* are said to have been relieved and even removed by a drop or two of the oil applied to the tongue. The effect on the nerve was almost instantaneous.* It is further said, that the application of it to the tips of the fingers, produced, without any local inflammation, a sense of numbness in the whole extremity, dryness in the throat, and head ache, which continued for several hours.†

* *Medico-Chirurg. Review*, No. 6

† *Med. Repos.* July, 1823.

SECTION IX.



ENEMATA.

As supplementary to the consideration of cathartics, I proceed to make some remarks on the use of enemata, or clysters. Though these may appear very humble means, they are often employed as substitutes for purgatives, and have been found to answer many other important purposes. Every part of the alimentary canal maintaining the most intimate relations with the system, remedies applied to either extremity of it are productive of nearly the same results. But, when introduced into the rectum, as a general rule, they ought to be in about three times the ordinary dose.

I shall treat of enemata in the order of the indications which they are calculated to fulfil. Commonly we recur to them to promote the tardy operation of a cathartic, or to evacuate the bowels, where, from delicacy of stomach, such medicines cannot be retained. All that is required here is a simple laxative mixture,

composed of an ounce of castor, or olive oil, and the same quantity of molasses, with a pint or more of tepid water : to render it somewhat stimulating, a table spoonful of common salt may be added. In obstinate constipations, proceeding from various causes, more active injections become indispensably necessary. Of this description, we have a vast number, and one which is generally directed is a large solution of Glauber or Epsom salts, alone, or with oil. In flatulent colic, the terebenthinate clyster, made by blending intimately half an ounce or more of the oil of turpentine with the yolk of eggs, adding a pint of thin mucilage, or water, is very useful. When these ingredients cannot be had, the watery solution of assafoetida may be substituted.

An infusion or decoction of the drastic purgatives, has been recommended, in obstructed bowels, and of colocynth particularly. The mode in which this last is prepared, is to boil three drachms of colocynth in a pint and a half of water for twenty minutes, then straining the fluid, add one ounce of oil, and as much of the sulphate of magnesia. The best injection of this sort, however, is a pint or more of a strong infusion of senna, with a drachm or two of jalap.

An opinion has been advanced, that enemata act pretty much by the stimulus of distension, and hence the mildest fluids answer as well as the more active articles. To a certain extent, this is true—and, in cases of stubborn constipation, it should be recollected as a guide to our prescriptions. I have, more

than once, known, under such circumstances, warm water to prove effectual. The fact is, that the bowels being very irritable, stimulating enemata are apt to bring on or confirm spasm, by which the obstruction is rendered more unrelenting. Yet we have the clearest evidence of the susceptibility of the intestines to the impression of medicine, and, as a general rule, of the increased power of enemata, by the addition of a cathartic substance. Distension of the bowels by warm water, having occasionally overcome obstruction when active enemata had failed, proves nothing—since the same effect is produced in the stomach, by similar means, in certain states of that viscus—and yet no one denies the general power of emetics.

Enemata, of an opposite character to those first enumerated, are also prescribed in similar cases, acting, chiefly, by inducing extreme relaxation. Every one has heard of the efficacy of tobacco with this view, in the shape of an infusion or the fumes. The first preparation consists of a drachm of the leaves to a pint of water. But so distressing at all times are its effects, and often so alarming, that it ought not to be resorted to, except in an emergency. Even then, it will be advisable to proceed cautiously, exhibiting only half the quantity at once. Death has sometimes happened from this injection, and I have repeatedly witnessed the life of individuals placed in some jeopardy by it. Yet it is a remedy of such indisputable efficacy, that we cannot entirely dispense with it. By Mr. Earle it has, therefore been lately proposed,

that, as a substitute for the enema, we should, in all cases, use a suppository of tobacco, which, at a moment, may be withdrawn, and all bad consequences averted.

To administer tobacco fumes, a particular apparatus has been invented. But should this not be at hand, it may be done conveniently with a common clay pipe, introducing the tube into the rectum, and covering the mouth of the bowl with a fold of linen, through which the smoke can be blown into the bowels. The fumes are far safer than the infusion, and, according to my experience, much more effectual. Each of the above modes of using tobacco is resorted to for other purposes.*

As acting in the same way, and hence appropriate to cases of spasm, the opiate injection should here be noticed. Eight or ten grains of opium, or a corresponding portion of laudanum, entangled in a gill of mucilage, and lodged in the rectum, will, by overcoming spasmodic stricture, occasionally be found most happily to succeed in overcoming obstructed bowels.

Tepid water alone, I have said, often opens the bowels. The reverse of this is sometimes practised with advantage, under desperate circumstances. Constipation the most obstinate has been removed, by an injection of the coldest water, even iced water. Effectual, however, as the preceding formulæ generally prove, cases do occur, in which they fail. As a der-

* Vid. Emetics.

nier alternative, I would suggest the bold exhibition of emetic tartar, as formerly pointed out, injecting from twenty to sixty grains dissolved in water. Ipecacuanha may be also used, and, sometimes, more safely.

Clysters rarely reach, even when most forcibly urged, beyond the sigmoid flexure of the colon. They act principally, by exciting the lower portion of the intestinal tube, and produce only partial discharges. Hence they are comparatively of little service, unless a purgative has been previously taken, in which event, by promoting its operation, the alimentary canal becomes completely evacuated. But such is not invariably the case. It sometimes happens, that the local impression is extended through the medium of sympathy, and very thorough and copious discharges are the consequence. To accomplish this end, the injection must, in some instances, be frequently repeated, with the largest possible quantity of fluid which the bowels will admit. As to ordinary cases, I will state the measure adapted to the several stages of life, which may serve as a rule in emergencies. An infant, at its birth, or soon after, requires one ounce : a child, between the age of one and five years, from four to six ounces : a youth of ten or fifteen years, a pint—and an adult, from a pint and a half to a quart.

The means ordinarily used, for the administration of enemata, are, a pipe and bag, or a pewter syringe, both of which are defective, on several accounts, and

especially where we wish to throw up a large quantity. De Haen's instrument, for this purpose, is a common syringe, with a lateral tube fixed to it, through which it may be replenished without drawing it from the rectum. No doubt, by this contrivance, so much fluid might be injected, as to overcome, by mere distension, almost any obstruction of the bowels. This, indeed, is no longer a matter of conjecture, as the experiments of De Haen himself show the practicability of it, having thus filled the colon of a dog,—forcing the valve, which offers the resistance to the passage of fluids upwards. Greatly superior to either of the common instruments, is a large flexible catheter, fixed to a bladder, or a bag of oil silk. It is easily introduced,—gives no pain, from the readiness with which it accommodates itself to the course of the intestine,—and reaching up to some distance, so disposes of the matter of the injection, as to secure its retention, and, in other respects, the fuller and more complete operation of the measure.

Enemata answer several indications besides such as have been mentioned. But, as these do not properly appertain to cathartics, they cannot be noticed particularly in this place. All that I shall remark further is, that, when used as fomentations, the blandest fluid, in large quantity, is selected,—that, to restrain diarrhœa, or to relieve spasm of the bowels, or for any anodyne purpose, an ounce of thick mucilage, with a portion of laudanum, is the form adopted,—and that, to re-

move the tormina, or tenesmus, of dysentery, the best injection consists of a pint of melted butter, or lard, perfectly fresh, or, in other words, without salt, or rancidity.

SECTION X.

Diaphoretica, or Diaphoretics.

DIAPHORETICS are those means which promote the perspiratory discharge. But, in some instances, their beneficial effects are attained by a removal of the morbid condition of the cutaneous capillaries, without any very obvious effect of the kind. In the common language of the schools, the term is restricted to those articles which produce insensible perspiration, while such as occasion sweating, are distinguished by the appellation of sudorifics. But since no difference can be discerned in the medicines arranged under these titles, except in the degree of force, or what arises from the manner of administration, I shall comprehend the whole under one head.

The fluid is the same, only that in one case it escapes more slowly, and is conducted off by the air as an insensible vapour, while, in the other, from its copiousness, it appears in a liquid form. The state it assumes, therefore, depends, in some degree, on the

moistness or aridness of the atmosphere, the conducting power of which being regulated by these qualities.

An obstruction of the cutaneous discharge may be connected with a very opposite state of the circulation, excited, or the reverse, and a different set of means becomes proper, according to the circumstances of the case. The discharge, indeed, is so much influenced by the condition of the system, that when profuse from over excitement, it may be checked by direct reduction, and conversely, being colliquative from exhaustion, by stimulants and tonics. It hence follows that there is properly a *sweating point*.

It may be promoted by an invigorated action of the cutaneous vessels, either from the direct application of stimulants to them, as blisters or frictions, or by augmenting the general force of the circulation. Diaphoresis, however, is not the constant and necessary consequence of increasing the energies of the heart and arteries, as a constriction of the extreme vessels often exists, by which the tendency to this process is counteracted. To excite sweating, under such circumstances, something is required to overcome this resistance, and which is most effectually accomplished by inducing relaxation of the surface.

Different, however, as the several means may be, in their *modus operandi*, they all concur, when properly applied, in reducing morbid action, and hence are to be considered as one species of depleting remedies. They lessen the force of the heart and arteries, by an eva-

cuation from the skin—by taking out of the ordinary route, a certain portion of blood, which is determined to the extreme vessels—and by overcoming the constriction of surface, which acts as an indirect stimulus to the moving powers of the circulation. By their centrifugal tendencies, they, moreover, lessen or entirely remove deep-seated congestions, and produce on the capillary system, now ascertained to be so important in every view, an impression of the most salutary nature.

The acute or febrile diseases would seem in their very essence to consist in derangement of these vessels, and, till the latter are re-instated in their healthy functions, continue with little or no abatement. By the mere force of stimulation, or the reverse, undue relaxation, transpiration from the superficial exhalents, as already stated, may take place. But, however profuse, it is productive, in this case, of no decisive benefit, and is, for the most part, mischievous by the exacerbation of excitement, or increase of debility. To be effectual, the impression on the capillaries must be such as to subvert the morbid condition in which they have been thrown, and then it is really of no great moment whether the perspiratory discharge be copious or otherwise. Every practitioner has seen febrile diseases give way under the use of antimonial preparations, where a mere softening of the skin was the only sensible effect. The same may be remarked in certain chronic cutaneous affections, under the use of articles which can hardly be viewed

as diaphoretics, though undoubtedly operating on the capillaries.

On the change occurring, to which I have alluded, in acute diseases, we shall often observe a moisture on the skin, and with it a decrease and more equal diffusion of temperature, a restoration of the lost balance in the circulation, a return of natural secretions, and, finally, an entire subsidence of the febrile commotion. That the mere evacuation by the surface is not all that is required in the operation of diaphoretics, is further shown by the inefficiency of vicarious discharges, to whatever extent they may take place. In suppressed perspiration, it often happens, that either from the kidneys, or the exhalents of the intestines, there are eliminations of watery fluid equal to those of the skin in its best condition. That these, however, do not compensate, in any great degree, the want of the original function, common experience sufficiently testifies.

There is a close analogy, in this respect, between the cutaneous and uterine offices. No forced discharge of blood, from the womb itself, or from other parts, relieves the condition induced by a suppression of the catamenia. The menses, like perspiration, being a peculiar fluid, the result of a secretory action, the vessels by which it is performed must be replaced in their natural state, which is done in both instances by specific impressions—in the one by emmenagogues, and in the other by diaphoretics properly so called—which have as positive a relation to the surface as

emetics or cathartics to the *primæ viæ*, or diuretics to the kidneys.

I shall now suggest some few rules for the administration of these remedies.

1. To promote perspiration, it is necessary that the patient should be confined to bed, and the pulse and temperature of the body carefully watched. The one being vigorous, or the other high, venesection, purging, and cold applications, where not particularly forbidden, should be employed. It is said, that sweating never takes place, when the heat of the skin is above a hundred and eight degrees, and, by a later writer, six degrees less—it is equally true, that, with a very vigorous pulse, it rarely happens—and, when it does, is partial and injurious.

2. Commence in all acute or febrile diseases with the mildest articles.

3. In the exhibition of diaphoretics, give diluent drinks, unless the stomach be irritable. This qualification chiefly applies to the antimonial preparations, and some of the combinations of ipecacuanha. The temperature of the drinks must be regulated by that of the skin. The latter being low, they should be warm, or even hot, and otherwise cold.

4. In feeble states of disease, while pursuing the diaphoretic plan, carefully avoid purging, unless circumstances imperiously require the remedy. It is very apt, in this state of the system, to check sweating, and to aggravate the complaint, which it does,

by diverting action from the surface to the intestines, and by exposing the patient to cold.

5. As the action of the cutaneous vessels, and of the urinary organs, is in an inverse ratio, it is no less proper, that when we wish the one, the other is to be restrained. During the operation of a diaphoretic, therefore, we are also to abstain from the use of whatever excites the kidneys.

6. In cases where a regular and long continued discharge from the skin is desirable, we should never hesitate to substitute a flannel for a linen shirt. This is an important precept. It is, indeed, impossible to keep up perspiration for any length of time, with uniformity, without using flannel next to the skin. The older practitioners resorted to it, in all cases in which diaphoresis was to be promoted. This, however, is not only unnecessary, but really injurious in acute diseases, and especially in the febrile affections.

7. The linen or flannel of the patient, with his bed-clothes, should be changed, when the process of sweating is over. The filth thus generated is prejudicial in itself, and adds so much to his uneasiness as sometimes to re-excite fever.

SECTION XI.

The Practical Application of Diaphoretics.

CONSIDERING the connection which the skin has with the other parts of the body, and the dependence of health on the perspiratory function, it is obvious, that diaphoretics, when judiciously managed, must be a very important class of remedies. Yet there is no one which has been more abused. The practice so generally prevalent at one time, of endeavouring to cure diseases of an inflammatory nature, by extorting sweat by the profuse exhibition of the heating and stimulating articles, was productive of the most mischievous effects, and brought these medicines into discredit among regular practitioners.

Of all the plans, however, of treating disease, the practice of sweating is, perhaps, the most popular, and generally adopted. By the vulgar it is constantly resorted to, as the safest and most effectual process. Nor is this opinion confined altogether to the low and illiterate orders of mankind. Every class of society

seems, in some degree, to have acquiesced in the prejudice, and to entertain the same views. Yet, it is plain, that remedies which so powerfully operate on the system, are not wantonly to be trifled with, or inconsiderately used.

To intermittent fever, diaphoretics are well adapted. Correctly prescribed in these cases, they have the twofold effect of conducting the paroxysm to a speedy solution, by exciting perspiration, and, in some instances, of obviating its recurrence, by supporting the tone of the extreme vessels. But in these opposite states of the system, a very different species of diaphoretics is exacted. To prevent the paroxysm, the stimulating articles are usually directed, and, to subdue it, the cooling and relaxing are found to be preferable.

Nor are they less suited to remittent and continued fevers, though not rashly or indiscriminately to be employed. Discarding the notion, of fever being an effort of nature to throw off peccant matter, as was once supposed, we are not to force or encourage perspiration in the early stages, by the use of any of the alexipharmic means. On the contrary, let it be recollected that, in the present reformed state of our science, it is a principle fully recognised, never to resort to diaphoretics, in fevers of an inflammatory character, till arterial action and general excitement are considerably reduced by previous venesection, and evacuations of the alimentary canal. After such depletion, they come in with great advantage, and will

commonly either mitigate, or arrest the progress of the disease. Even here, however, we trust only to the milder articles, combining with them the auxiliaries which have the same cooling and relaxing tendencies. It may be laid down as a rule, never to be deviated from, that, in the whole of the inflammatory cases, we are rather to solicit perspiration by lenient means, than to extort it by any violent measures.

These observations are particularly applicable to our autumnal bilious fevers. Commencing nearly always as synochus, if neglected, or a premature appeal be made to stimulants or tonics, to the exclusion, or there be only a moderate use of evacuants, and especially of emetics and purgatives, they never fail to become typhoid, and run, in many instances, a protracted career. Yet, properly timed, I have found diaphoresis, kept up for twelve or eighteen hours, successfully to conduct these cases to a crisis, by breaking the wrong habits of action by which they were continued.

Of the use of sweating in yellow fever, I am not prepared to say much. It was, by myself and other practitioners, fairly tried, in some of the visitations of that epidemic, and, though occasionally of benefit, it did not afford any great encouragement. Elsewhere, however, it may have proved more serviceable, and I have understood, that it has always been made a leading part of the treatment of the disease, by some of the most distinguished medical men of New York. Yet my conviction is, that, in common with most

other modes of managing yellow fever, it is so unavailing as hardly to deserve attention.

Genuine typhous fever being accompanied with feebler action, attempts to excite perspiration in it may be earlier made. Even here, however, circumspection is necessary. It is now a principle, sanctioned by the highest authority, that, in typhus, sweating ought to be preceded by evacuations of the alimentary canal, cold applications to the surface, and sometimes by venesection. The typhous fever, such as I have alluded to, is not one of the ordinary complaints of this city, or, perhaps, in any great degree, of any section of the United States. Exclusively, or nearly so, the product of camps, of ships, of jails, and other crowded receptacles of vice, poverty, and filth, it finds no where, within the limits of our happy country, any copious source of generation, or the medium of general prevalence. The fevers we commonly recognise under this title, are caused by marsh miasmata, or the extremes or sudden vicissitudes of temperature, or an epidemic influence, by which I mean a distemperature of the atmosphere, independent of morbid impregnations, or changes in its sensible qualities.

In place, however, of this severe scourge of Europe, there appeared among us, some winters ago, a wide, wasting disease, of a typhoid character, which has ravaged some of the fairest portions of our country. All accounts agree in representing it, the spotted fever, or peripneumonia typhoides, as it is more generally

called, as a Proteus, assuming every variety of shape, and requiring no little diversity of treatment. But, in whatever form it commences, there generally ensues great, and, in some instances, an unprecedented prostration of strength.

Two leading modes of treating the disease, have been adopted. By one set of practitioners, the most profuse use of the diffusible stimulants has been recommended, while, by another, the sweating plan is preferred. My opportunities have been sufficient to compare these different modes, and I do not entertain the slightest doubt of the superiority of the latter. The physicians of this city, at least, are generally agreed on this point, and they all acknowledge the infinitely greater success which attended the early and steady employment of the more active diaphoretic measures. But such is the practice only when the disease assumes its most simple guise. Distinguished, as it often is, by local determinations, in the bilious, pneumonic, and anginose cases, it is conceded that in these some variation of treatment is required. Emetics, here, have been found eminently useful, followed by the mercurial purgatives. The end being attained for which these evacuants are directed, we may recur to diaphoretics,—and, to remove any remnant of topical congestion or inflammation, blisters, or the rubefacients, become the appropriate means.

Besides this, we have another form of essentially the same description of fever, which has hitherto not been noticed, or, at least, I have not met with any ac-

count of it—produced by an exposure to cold, and affords one of the clearest illustrations of the sedative influence of a low temperature when long continued. The cases which have come under my observation, were among the paupers of our Alms-house Infirmary, who, taken out of the streets, or other exposed places, are brought into that establishment, during intensely cold weather, in a state approaching torpidity. They are often in a heavy stupor—the power of speech is lost, or impaired—the pulse very weak, or imperceptible, the surface cold, with nearly an extinguishment of sensibility, and suppression of the movements of vitality. In this situation, which resembles not a little the incipient state of hybernation of some of the inferior animals, the indication is obviously to solicit the return of the actions of life, by the use of stimuli, graduated to the feeble remains of excitability. Though the warm bath, in the commencement, answers better than any other remedy, when this cannot be procured, dry heat to the surface may be substituted. Cordial stimulants should, at the same time, be given internally.

It is, sometimes, difficult to arouse the system by any plan of treatment. Commonly, however, a partial re-action takes place, and the result is, a slow and feeble state of fever, analogous, in many of its attributes and leading features, to typhus gravior. As in that disease, in its advanced stages, the tongue is incrustated—the skin hot and parched, the pulse quick and small: there is low delirium—eyes glassy, with

dilated or exceedingly contracted pupils—and the lank, haggard, and distressed expression of countenance peculiar to the worst forms of the malignant febrile affections. In many instances, I have known the patient to continue in this state, with little or no deviation, for several weeks, and ultimately to recover. During this protracted period, the treatment consisted in the persevering exhibition of the carbonate of ammonia, turpentine, camphor, wine, or warm spirituous drinks. As soon as the system reacts more fully, diaphoresis may be induced with advantage. It relaxes the surface, develops a new animal temperature, and releases, as it were, from the bondage in which they had so long been held, the recuperative energies.

To the typhoid epidemic of the winter, which disappeared about four years ago, one of the autumn, of equal prevalence and scarcely less mortality, succeeded, under the several shapes of intermittent, remittent, and continued bilious fever, and though, in its turn, it has nearly vanished, may require some brief notice from me. Diversified, as it was, it is impossible in a mere summary to convey any precise views, either of its nature or method of treatment. In many instances, whatever type it might assume, there was little peculiar in character, and it was managed in the usual way. It occasionally, however, in every form, presented the aspect of malignity, which required the treatment to be accommodated accordingly. Evacuations of the *primæ viæ*, and sometimes venesection, having been

premised, the mild diaphoretics were resorted to, and ultimately the cordial stimulants and vesicating applications. In reviewing, however, the general practice in this disease, I cannot forego the expression of my opinion, that no inconsiderable portion of the mortality resulted from the erroneous view entertained of its pathology. Considered, by too many, as a real typhous fever, stimulants and tonics were prematurely employed, and the very condition apprehended was actually induced. There are few propositions more true, than that in the commencement of fevers the appearances of debility are simulated, or proceed from *oppression*, and not *exhaustion*, of vital energy, and that the cure consists in lightening rather than loading the system by any additional weight of stimulus.

Next I am to make a few remarks on the application of diaphoretics to the exanthemata, or such as are produced by a specific contagion. During the dominion of the humoral pathology, a system originating in an eclipse of medical reason, and perpetuated among some, even to the present moment, by an ignoble servitude to authority, it was believed, that the particles of the virus floating in the circulation, and still keeping up the disease, could be eliminated through the pores of the skin. Conducting the treatment on this hypothesis, the sweating plan was early resorted to, and pushed to the utmost extent, affording another example of false theory being the parent of mischievous practice. In such diseases, whether of a low or inflammatory character,

a point will occur to every judicious practitioner, at which he may resort to diaphoretics. But there is nothing peculiar in their operation. They act here on the general principles I have already stated, and all that is necessary to their correct administration, is, an attention to the state of the system,—using the milder or stimulant medicines, according to circumstances.

Diaphoretics are among the best of our remedies, in some of the complaints of the alimentary canal, as might be inferred from the intimate consent between the skin and the latter structure. Long ago the celebrated Akenside proclaimed their superior utility in dysentery. To the preparations of ipecacuanha, as before stated, he chiefly trusted. The same views have subsequently been adopted, with some modifications, by several distinguished practitioners.* It is, by Richter, an authority among the highest, particularly insisted, that dysentery is a rheumatic or catarrhus affection of the large intestines, and, accordingly, in its treatment, the leading indication is to excite perspiration. Without adopting precisely his theory, as applicable to all cases of the disease, I concur in the propriety of the practice duly timed. It is my conviction, that in the bowel affections, we have, as a general rule, purged too much. Cherishing, still, the antiquated notion of morbid humours, it is usual, in these complaints, with some practitioners, to evacuate the intestines, as long almost as any discharge

* Vid. Mosely on Tropical Diseases.

can be procured, under the impression, that the matter retained is irritating and offensive, and, therefore, the immediate source of all the mischief. The very reverse of this, I hold to be true. The accumulation of acrid matter, is the effect of previous irritation in the stomach and bowels, which causes an increased effusion from the mucous follicles, or the exhalent vessels, and, sometimes, a very vitiated secretion of bile. Deducing my practice from this view of the nature of the disease, I have been accustomed, after comparatively moderate evacuations, to exhibit medicines so compounded, as to meet the double indication of allaying intestinal irritation, and, more remotely, of relaxing the surface. Combinations of opium and ipecacuanha, to which calomel may sometimes be added, are an invaluable preparation for these purposes. But the irritation being excessive, and, as usual, productive of frequent and painful discharges, I either augment the quantity of opium, or, what is more effectual, administer anodyne injections, three or four times in the course of twenty-four hours. These remedies will, in most cases, calm the irritation of the bowels, and, as soon as this happens, the acrid discharges, together with the other symptoms, generally cease to be troublesome. Yet, in some instances, such is the extent of the re-accumulations of vitiated matters, that it becomes proper to intermit this course, and recur, for a time, to purging. Dysentery, however, being typhoid, which it is, generally, when occurring in crowded

and ill-ventilated apartments, we may earlier resort to diaphoretics, and of the cordial, active, and stimulating class.

Much of what I have said is scarcely less suited to diarrhœa in its acute stages. Evacuations of the bowels having been premised, the healthy function of the surface requires to be reinstated, and more particularly when the attack is brought on by cold. Equally is it applicable to cholera morbus, as well as to that bowel affection of children, emphatically called the SUMMER COMPLAINT.* The latter, which might really be considered as among the opprobria medicorum, from the dreadful expenditure of life which it occasions, owes much of its mortality to the preposterous mode in which it has hitherto been treated. Continually purged, as is the ordinary practice, what else can be anticipated from such a course of exhaustion, than the rapid decay, and ultimate dissolution, of the delicate frame of a child? Entertaining the same views of its pathology, I endeavour, after comparatively limited evacuations, to quiet irritation by similar means, which, being accomplished, I next resort to astringents; to restore the tone of the alimentary canal.

That it is important in the management of all these affections, to attend vigilantly to the state of the surface, is now sufficiently obvious. To attain this end the more effectually, the co-operation of blisters, and of warmth, by means of flannel, is frequently requir-

* Cholera Infantum.

ed—which should be applied as a roller tightly around the abdomen. By this simple expedient, I have done great good, having much used it both in my public and private practice, before I saw the work,* where it is particularly noticed.† The roller seems to act, by affording mechanical support to the bowels, by producing a determination to the surface, by exciting moderate diaphoresis, and by sustaining the natural degree of temperature. By the writer to whom I have alluded, it is stated, that this application is equally beneficial, even in the commencement of dysentery, an opinion, however, in which I cannot acquiesce. As preventive of a relapse, when apprehended, it may be recurred to, in the convalescence of that disease, or, perhaps, in its advanced stages, having seen it particularly serviceable under such circumstances, in cholera infantum, and, at all times, in diarrhœa.

Hitherto I have had reference chiefly to the acute forms of intestinal disease. Before I dismiss the subject, I must say a word or two of the chronic states, and first of dysentery. This is a complaint, which has not attracted as much attention as it deserves. Though the acute symptoms be removed, there still remains, in this case, considerable tenderness of the bowels, which are excited to action by the slightest causes, producing small and offensive stools. Every

* Dewar on Dysentery, &c.

† It is also a matter of proof, that many years ago, I used the roller to rheumatic limbs, and in the gangrene of œdematous swellings.

evacuation is attended with more or less griping. Little appetite exists, and the food is not digested. The skin is dry and parched, the complexion sallow, the eyes sunk, the expression of face meagre and shrivelled, and there is a slow diminutive fever. Evidently here, among other irregularities of function, blood is confined to the deep-seated vessels, and the determination to the surface diminished.

Cases of the complaint, which had resisted the ordinary treatment, I have seen rapidly recover, by small and repeated bleedings, aided by those means which secure a moderate degree of perspiration. The same practice may be pursued in chronic diarrhœa, and in protracted cholera infantum. The disease, in all these forms, is occasionally continued, by a morbid condition of the liver, or some other of the abdominal viscera, and here calomel, in minute quantities, should be united to the other medicines.

Concerning peritoneal inflammation, I have already had occasion of expressing my opinion of its nature, and the difficulty of cure. I shall, therefore, after repeating, that the most prompt and copious detractions of blood, are indispensable in the first stages of an attack, only mention, that having reached the point when direct depletion must be stopped, sweating is the next remedy in which we ought to confide, and that it will often be productive of the most satisfactory results.

What I have to say in relation to the application of

diaphoretics to the more genuine phlegmasiæ, need not detain me long. It may be laid down as a general principle, that, though indicated in nearly the whole of this order of diseases, their use must be preceded by measures of a more direct and powerful tendency, to reduce the force of the circulation, and restrain an excess of heat. Cold to the surface is an admirable remedy for the latter purpose, though there are some exceptions to its use, of which rheumatism is one. Why it should prove injurious, when applied to heated and inflamed joints in this disease, does not very clearly appear. Of its tendency at least to produce metastasis, and sometimes even to vital parts, there can be little doubt, and we must be governed accordingly in practice.* Every one who is at all conversant with disease, has heard of the singular efficacy of sweating in rheumatism. Yet, it is to be recollected, that, in the inflammatory stages, it is never beneficial, and ought uniformly to be preceded by active depletion.

In the associate affection, gout, much difference of opinion has prevailed, on the propriety of this class of remedies. Believing it to be one of the diseases dependent on morbid matter, and that the skin is the natural emunctory for the discharge, the disciples of the humoral pathology indulged in the free use of diaphoretics. I have already developed my views, as to

* Cold applications to rheumatic swellings, have been used in this country, on the authority of the Russian physicians, and, I have reason to believe, with results such as I have stated.

the treatment of the arthritic affections. As secondary means, diaphoretics are serviceable. Nature, whose indications ought always to be consulted, and may, most generally, be trusted, sometimes points to their use. The paroxysms of regular gout, when spontaneously cured, are so, commonly, by diarrhœa, diaphoresis, or diuresis. Yet we are not too early to resort to this remedy. Nearly as much as any other case, is the arthritic paroxysm distinguished by a high degree of inflammatory action, peculiar in its nature, though best managed by the ordinary means of depletion. The pulse and temperature of the surface being lowered, mild diaphoresis may be induced with advantage.

Cold applications are here also prohibited. Much, I am sensible, has been said in their favour, and especially of the utility of immersing the feet in a cold bath, when painfully swollen. But the experience of the wise and the circumspect, the best guide in such matters, is decidedly against the practice. The only case in which it is admissible, is where the subject of attack is of a vigorous constitution : even here, it will be prudent to fortify the stomach previously, by taking something cordial and stimulating, so as to guard more completely against a retrocession.

Constriction of the surface having uniformly an unfavourable influence on the pulmonary affections, diaphoretics, with a view of overcoming it, are clearly indicated—and in opposite stages. Exhibited in the forming state of catarrh, or pneumonia, or asthma,

sweating will sometimes completely suppress the attack. But, postponed till the disease is firmly fixed, it never fails to exacerbate the symptoms, and to render the cure more tedious and difficult. Yet, as in the preceding cases, when arterial action is sufficiently reduced, it may be used to equalize excitement, and extinguish the remnants of morbid action. This is especially true in pleurisy, and other acute shapes of pneumonic inflammation. The skin becoming relaxed and moist, we shall find tightness and oppression of the chest to give way, followed, for the most part, with freedom of breathing and expectoration.

The only case of neuroses in which I have used sweating, is idiopathic tetanus. This affection, when produced by exposure to cold, a very common cause of it, partakes much of the character of rheumatism, and exacts nearly the same treatment. But there is this difference in the two cases, that in the former little activity of pulse exists, and the surface is cold and damp in the first stage. Diaphoresis, therefore, is at once required, and, when the system fully re-acts, which it will speedily do, under the use of the warm bath, carbonate of ammonia, and wine whey, then, if necessary, we may purge and bleed.

Of the cachectic cases, in which diaphoretics are employed, diabetes is one. Two opinions at present exist relative to the origin and seat of this disease. The first refers it altogether to derangements in the renal organs, and the second to disorder of the digestive apparatus. The latter hypothesis has received

the support of several ingenious writers, and seems to me to be correct. To this conclusion I am led by various considerations. It may be sufficient, however, to observe, that any imperfection in the assimilative process, must necessarily affect the urine, and that *functional* disorder may ultimately produce *structural* disorganization in the kidney.

Of this disease there are two species, the *mellitus* and *insipidus*. Differing as it may, in this respect, it is still managed by nearly the same remedies, accommodated to the state of the system, and the particular circumstances of the case. It is not my intention to enter into the treatment of diabetes. Yet I cannot forbear again to mention, that in the cases which have come under my notice, there was activity of pulse, with the other indications of the febrile condition. Bleeding repeatedly, and never without manifest advantage, I have next trusted to occasional purging, and, finally, to the plan which is adopted in dyspepsia, consisting of the alterative use of mercury, of tonics and antacids, and to a diet restricted to milk, and the lighter and more digestible meats exclusively.

I have remarked, that sweating has sometimes been used with success in these cases. This, indeed, is a process from which salutary effects might have been anticipated. I mean so far, at least, as respects the diminution of the urinary discharge. The principle on which it acts has been explained on a preceding occasion. Besides the diversion from the kidneys to the surface, which it induces, it seems especially re-

quired by the state of the skin, when parched and heated, or cold and scaly.

The discharge by the surface, diminishing that from the kidneys, diaphoretics could hardly be presumed to be admissible in dropsical effusions. They have, however, unquestionably done good in some of these cases. I have used them myself with sufficient success to recommend the practice. The cases to which sweating seems more particularly adapted are such as originate in intermittent fever, and are kept up by visceral congestions. Commonly, there is here a small, tense, corded pulse, cold extremities, pallid countenance, dry skin, with the other indications of a feeble and imperfect circulation on the surface. Diaphoretics, by their centrifugal operation, relieve the viscera, by determining blood to the extreme vessels, and restore that equipoise in the circulation, which constitutes the first step in the cure of the disease. They, moreover, under the circumstances of torpor, which usually attend such cases, revive susceptibility to remedial impressions, and, in this way, also conduce to the cure.

No practitioner can be ignorant of the utility of diaphoretics in the more obstinate chronic affections of the skin. They act here, most probably, by changing the morbid condition of the extreme vessels.

To the preceding diseases, many others might be added, in which diaphoretics prove serviceable. But I have already lingered so long on this subject, that I cannot go into further details. Enough has been

said, to direct their general administration, and, as respects their special applications, I must leave much to the sagacity and experience of the practitioner himself. Yet, in conclusion, I cannot refrain from insisting on the value of sweating, as a remedial process. The practice, with some, I am aware, is in *abeyance*, from causes which have been assigned. But it is wrong to reason against the *utility* of a thing, from its *abuses*, or be influenced by such considerations. Like venesection, or any other measure, sweating may prove beneficial, or otherwise, as it is applied.

Employed under the control of a just discrimination, it will be found a highly important, and often an absolutely indispensable means, of combating disease. Let us not, therefore, be seduced away from a remedy so salutary in its tendencies, and so fully sanctioned by experience, by any of the idle objections that theory may raise, or false refinement in practice dictate.

SECTION XII.

Particular Diaphoretics.

ANTIMONIAL PREPARATIONS.

MUCH of what I should otherwise have had to say on this subject has been anticipated by my remarks on tartarised antimony, under the head of Emetics.

It is well known, that the antimonial preparations, without, perhaps, an exception, may be so managed as to prove diaphoretic, though there are two or three of them which, at present, are greatly preferred for this purpose. As an imitation of the once celebrated James's Powder, a combination of the calx of antimony with the phosphate of lime, called pulvis antimonialis, has been introduced into the materia medica, as one of the most certain of the sweating medicines. Though it is not at all improbable, that it may answer pretty well, it has, for some time, yielded, in

practice, to tartarized antimony, as a neater and less precarious preparation. Those, however, who are disposed to try it, may direct it in the dose of six or eight grains, to be repeated at stated intervals. Though the chemists have pronounced the identity of these two powders, in the practical application of them there is a difference, or I am greatly deceived. The James's Powder, when genuine, I have found a far more efficient medicine. But, as happens with all nostrums, prepared in large quantities, the several ingredients are so unequally mixed, that one parcel shall prove unduly active, and another utterly inert. This is often the case with James's Powder, and hence the uncertainty of its operation, and the discredit into which it has fallen. Yet I have, occasionally, derived from it the most important advantages, such as are rarely attained by any other antimonial. Lately, it has been extolled in the cerebral affections, and hydrocephalus and apoplexy particularly. Besides its ordinary effects, it is alleged to counteract determinations of blood to the head, and that, by the continued use of it in minute doses, the tendency to apoplexy is removed.*

On the continent of Europe, the golden sulphur of antimony† has long maintained an indisputable ascendancy, in the estimation of practitioners, over all its

* Vid. the papers of Dr. Stoker, in the Dublin Med. Essays, and the Transactions of the College of Physicians of Ireland.

† Sulphur Auratum Antimonii, *vel* Sulphuretum Antimonii Præcipitatum.

kindred preparations. My own experience will not allow me to speak in any decisive tone, as to its value. I have rarely prescribed it, partly on account of its being less convenient in the administration. It is usually directed in the dose of five or six grains, made into pills. As an alterative, however, for which it has been much prescribed, particularly in the chronic cutaneous affections, the dose is much less.*

Compared with emetic tartar, this and all other preparations of antimony are, in the whole, inferior, and may now be considered as having given place to it. To my former observations relative to its various uses, I beg leave to refer, only now adding, that when applied to the cure of chronic affections, it is given in very minute doses, and in various states of combination with the narcotics, and other articles, to which I shall hereafter direct attention.

* *Plummer's Pill*, formerly so much employed as an alterative in the secondary affections of syphilis, in chronic rheumatism, diseases of the skin, &c. is composed as follows :

R. Antim. Sulph. precip.
 Hydrarg. sub mur. āā. ℥ij.
 Pulv. Gum Guaiac. ℥iv.
 Sapo Ven. ℥ij.
 Div. in pil. āā. gr. iij.

Of these pills, two or three are given morning and night.

NEUTRAL SALTS.

Of these I have already treated as purgatives. Exhibited in minute doses, alone, and still more in union with antimony, they generally produce diaphoresis, or, at least, a softness of skin, accompanied by a reduction of arterial action, and of animal temperature. In this respect, they resemble the mineral acids, and some other articles, denominated refrigerants. How this latter class of medicines produce their effects, is not easily explained. By some of the later writers, it is referred altogether to a chemical action. But the hypothesis, though sufficiently ingenious, affords no satisfactory explanation. As the reduction of the force of the circulation usually diminishes animal heat, in a correspondent proportion, may it not be owing only to this cause? To meet the double indication of moving the bowels and relaxing the surface, the formula given under another head, will be found to answer very well.*

Not dissimilar in its effects, or, at least, in some of its leading effects, to this mixture, is a saturated solution of the carbonate of potash, with a vegetable acid.† To increase its diaphoretic power, the dul-

* Vid. Purgatives, p. 272.

† R. Succin. Limon recent.—vel Acet. Acid. \bar{z} ii.—Sal. Tart. q. s. ad saturand. adde Aq. font. \bar{z} ii.—Sacch. alb. \bar{z} i. The dose, a table-spoonful every hour or two.

cified spirit of nitre and tartarized antimony may be added, in such proportions as may seem necessary. This preparation is very well adapted to the febrile affections of children, and even to those of grown people of delicacy of habit. Grateful to the stomach, when given without the antimonial, it is calculated to allay nausea, soften the skin, preserve a laxative state, and obviate or subdue the exacerbations of fever. This is called the saline or neutral mixture. The draught of Riverius differs from it chiefly in being given in the state of effervescence: it is formed by dissolving forty or sixty grains of the salt of tartar in half a wine glass full of water, adding gradually, lemon juice, or sharp vinegar, till the fixed air be disengaged. By some practitioners the solution of the alkali is first exhibited, and immediately afterwards the acid, that the effervescence may take place in the stomach. As a corrective of nausea, and even to restrain vomiting, this draught is much celebrated.

NITRAS POTASSÆ.

No medicine is much more used in fever, and other inflammatory cases, than the nitrate of potash. I am, however, doubtful, whether it has any direct operation on the skin: unquestionably it does not often produce sweating. Yet, it is an important medicine in reducing the force of excitement. To increase its powers, it is often united with calomel and emetic

tartar, and this combination constitutes the well-known nitrous powder, which, of late years, has been so generally employed in the practice of this country. The annexed prescription* is suited rather to the more robust patients, and, from the quantity of calomel it contains, will be apt to purge. In some cases, it will be prudent to exclude the calomel, lest it might harass the bowels, or excite salivation, which it is likely to do, when long continued. I have known, indeed, more than once, a single dose to have this effect. The emetic tartar will also have to be graduated to the circumstances of the case. Even in the moderate quantity in which it enters into this prescription, it sometimes distresses the stomach, or excites vomiting.

By weakening vascular action, nitre proves of great service in active hæmorrhage. In this city, a saturated solution of it in ardent spirits, of which a table spoonful is given at short intervals, to suppress the flow of blood, has become a popular prescription in hæmoptysis. The same is mentioned by Richter. But, under such circumstances, the watery solution is to be preferred.

We learn from a late writer, that a free solution of nitre, with a small portion of gum arabic, is peculiarly calculated to allay the inflammatory tendency in the second stage of dyspepsia.† In prescribing it, however, we should be exceedingly careful, not to tran-

* R. Sal. nitr. ʒi. Calom. prep. gr. xii. ; Emet. tart. gr. i. m. Div. in pulv. viii. Of these powders, one may be taken every hour or two

† Wilson Philip on Indigestion.

scend the proper dose. Too largely given, nitre is as apt as any article whatever, to relax the stomach, and sometimes, when not to be suspected, to induce inflammation of that viscus.

SPIRITUS ÆTHERIS NITROSI,

OLIM

SPIRITUS NITRI DULCIS.

The spirit of nitre is one of the mildest and most agreeable of the diaphoretics, exceedingly appropriate to the cases of children, and other delicate persons. It may be given alone, in the dose of a tea-spoonful, occasionally repeated, or in various states of combination.*

As applicable to this, in common with the whole of the lenient diaphoretics, I have to remark, that they ought to be given at much shorter intervals, and, when

* *Incompatible substances.*—With a solution of *green* sulphate of iron, it strikes a deep olive colour; and with the tinctures of guaiacum, it produces a green or blue coagulum. When added in a small proportion to *malt* spirits, it gives them a flavour resembling French brandy. It is presumable, that the peculiar flavour of *cogniac*, depends on the presence of an etherial spirit formed by the action of tartaric, or, perhaps, acetic acid, on alcohol. In new brandy, there also appears to be an uncombined acid, giving it a peculiar taste and quality, which are lost by age. This explains the reason, why the addition of five or six drops of *liquor ammoniæ* to each bottle of *new* brandy, will impart to it the qualities of that of the oldest date.—*Paris's Pharmacologia.*

necessary, from gastric distress, in smaller doses than commonly directed. The period indeed between the repetition of most medicines should not be so remote as to allow of the slightest abatement in the impression, and this applies with peculiar force to the articles of which I am treating. Their operation is transitory, and if the effect be not kept up, by a regular and frequent renewal, it quickly passes away, leaving the system to contend against all the consequences of the process of sweating, imperfectly performed, or too suddenly suppressed.

ACETATIS AMMONIÆ;

OLIM

SPIRITUS MINDERERI.

This preparation, once in high repute, has, in the fluctuations of practice, been supplanted by other medicines of less efficacy. With great certainty it excites perspiration, and may be used on many occasions. Of the diaphoretics, it is one of the best, to break down and bring to a speedy issue, the paroxysm of intermittent fever. Neither heating nor stimulating, it may be applied with less caution than most other articles. There is another circumstance which recommends this medicine : it is often retained in irritable states of the stomach.

The citrate of ammonia has most of the qualities of the preceding preparation. Generally it is an extemporaneous prescription, the lemon juice being saturated by ammonia, in the mode I have directed with regard to potash, in the neutral mixture.

IPECACUANHA.

The properties of this article as a diaphoretic are represented to be somewhat peculiar. It is said to be more antispasmodic than any of its class, and, for this reason, is particularly suited to cases where spasmodic constriction is to be overcome by sweating. Given alone, which, however, is rarely done, the dose of the powder is from a half to two or three grains. The wine may be substituted.

OPPIUM.

The force of the circulation, to excite sweating, may be increased by a variety of articles, among which is opium, though it is seldom prescribed alone with such a view. To temper its stimulating effect, as well as to determine it more directly to the surface, we generally combine with it antimony or ipecacuanha, in substance or in the fluid state. The sixth of a grain of emetic tartar with a grain of opium, will sometimes succeed. Laudanum, with antimo-

nial wine and dulcified spirit of nitre, is, however, a more common prescription.* This draught, though applicable to the ordinary catarrhal affections, or other complaints where a moderate diaphoresis is desirable, is not so well suited to raise, or to keep up profuse sweating in more intractable cases. To meet this indication, the union of opium with ipecacuanha is much to be preferred. Nor, indeed, in the whole circle of diaphoretics, is there one article, which, in my opinion, can at all be compared, as to certainty or general utility, to Dover's powder.† Comprising within itself opposite properties, it may, on this account, be applied to a great diversity of cases. This famous composition consists of one part of opium and ipecacuanha each, and eight of sulphate of potash. Attempts have been made to improve its qualities, by substituting loaf sugar, nitre, &c. for vitriolated tartar. But, so far from any advantage having accrued from these innovations, I am persuaded they have proved injurious. Dover's prescription has always appeared to me to be one of those lucky hits in the compounding of medicines, which allows of no alteration, either in the ingredients themselves, or the proportions. Made in the old way, this powder has, for a long time, maintained an almost unrivalled reputation, for cer-

* R. Tinct. Theb. gtt. xxv. Sp. nitr. dulc. ℥i. Vin. antimon. gtt. xxx. Aq. font. ℥ss. m. This combination very frequently operates as a diuretic in dropsy, and has more than once within my knowledge removed the effusion, under circumstances where such a result was not to be expected.

† Pulvis Ipecac. et Opii.

tainty of effect, and, before we run the risk of change, the evidence of improvement should be very clear and satisfactory.

In the exhibition of this preparation, very precise rules have been laid down by several writers, and particularly by Cullen. But I am not sensible that any particular formalities are demanded in the case, and all that seems to be necessary is an attention to those general precepts, which I suggested in my preliminary discussion on this set of medicines.

To point out in detail, the various diseases in which this powder is directed, would be superfluous. It is suited to nearly the whole of the phlegmasiæ, in the secondary stages, when arterial action, and general excitement, have been subdued by venesection, and the rest of the directly depleting processes. Yet it is in rheumatism, under the precise circumstances which I have just stated, that it has been mostly employed. As a maxim, let it be recollected, that Dover's powder is never admissible in this disease, while any considerable febrile excitement prevails, and, when once begun, the sweating is to be steadily maintained in obstinate cases for not less, on an average, than twenty-four hours.

In genuine fevers, it does not answer so well as the antimonial preparations. Why it is so, is not more easy to divine, than that one individual should be better fitted, and excel all others, in certain departments of exertion. But, such is the fact, and with it we must be content, in the present state of our know-

ledge. Nor is the inferiority in this respect restricted to this particular preparation. Most of the diaphoretics will as promptly, and more copiously, excite perspiration than the antimonials. Yet perspiration, thus induced, is not followed by the same salutary consequences, or, in other words, does not equally arrest the progress of fever. It would hence appear, that, in this fact, admitting it to be such, we have a new and additional reason for supposing that the antimonials are endowed with a specific anti-febrile power, independent of their diaphoretic properties. Certain it is, that their efficacy, in the cure of such cases, is not at all proportioned to the degree of perspiration which may take place.

Of the utility of Dover's powder in the bowel affections, I have nothing to add to what I have so recently said, under different heads. Though this precise preparation be not always prescribed, we resort to combinations of nearly the same articles, and in similar proportions.

Not long ago, we had some communications in the foreign medical journals, of the efficacy of Dover's powder in diabetes.* Whether it be really useful in these cases, I cannot determine, from any experience of my own. Diaphoretics are, however, sometimes called for in the disease—and this powder would seem to have, on several accounts, strong claims to attention.

By it exclusively I have treated dropsy, and not

* Med. Comment. Vol. X.—London Med. Journal, Vol. XI.

entirely without success. The experiment was made in one of the public institutions of this city, on cases apparently excited by cold, and blended with intermittent fever—in ascites, as well as anasarca.

The dose of the powder is about ten grains, to be repeated every third, fourth, or fifth hour, its operation promoted by warm drinks, and particularly wine whey. But these, as I formerly mentioned, are not to be allowed immediately, lest vomiting be provoked.

CAMPHORA.

Camphor is thought to appertain to this class of medicines. It evinces some affinity to the skin, though, by itself, it rarely produces perspiration. In this respect, its power may be augmented by variously connecting it with opium, calomel, nitre, ipecacuanha, antimony, &c.*

AMMONIÆ CARBONAS.

What I have said of camphor may be repeated of the carbonate of ammonia. Like that medicine, it acts on the surface, and pretty much in the same degree. Each is employed with advantage in the low

* Vid. Incitants.

states of disease, more, however, to sustain excitement than to promote sweating.*

EUPATORIUM PERFOLIATUM.

This is a native vegetable. Combining within itself a vast diversity of properties, it is susceptible of being applied to numerous purposes. By different modes of exhibition, it proves tonic, emetic, purgative, diuretic, and actively diaphoretic. It is in the last view that I now propose to consider it.

To catarrhal affections, in the early stage, this medicine is said to be adapted. The people of the country prescribe it freely in such complaints, and repose great confidence in its powers. Not the least memorable application of the article, was of this nature. Many years ago, we had throughout the United States, a species of influenza, which, in consequence of the sort of pain attending it, came to be denominated *break bone fever*. The eupatorium, acting as a diaphoretic, so promptly relieved this peculiar symptom, that it acquired the popular title of *bone set*, which it retains to the present moment. The more common name, however, is thoroughwort.

My own experience will not permit me to say much of it in rheumatism. Yet from analogy, which is corroborated by reports I have received from several

* Vid. Incitants:

respectable practitioners who have tried it, I entertain no doubt of its being beneficial.

It has been stated, that in one of our epidemics, the eupatorium was successfully prescribed. Encouraged by former experience, during the yellow fever of 1798, in this city, when the sweating plan of treating the disease was so eagerly pursued, it was again recurred to, and strenuously recommended. Nor was it overlooked in the management of our still more recent epidemic, the spotted fever : on the contrary, it came into very general use, and received the strongest attestations of many practitioners.

To several of the forms of dropsy, it is alleged to be applicable. Whether it be so, I cannot say from personal knowledge. The physicians of this and the neighbouring states, are in the habit of prescribing it, in these cases. It is presumable, from the general qualities of the medicine, that it would render most service in the forms of the disease generated in marshy districts. Dropsies of this kind commonly wear the intermittent type, and are successfully treated, in many instances, by an union of the tonic and diaphoretic remedies.

It is, moreover, said, that the eupatorium is beneficial in some of the chronic cutaneous affections, and particularly in a species of herpes, incident to some of the inhabitants of the southern states. That it should prove so, was indeed, to have been anticipated, from its active operation on the surface. Yet I know of no

eruptions among the *southern* people, and suspect the imputation to be a *northern* calumny.*

ASCLEPIAS TUBEROSA.

This is the title of a very beautiful and valuable plant, peculiar to the United States. To the southward, it is found most abundantly, though it is scattered throughout the country. It is known by the vulgar titles of swallow-wort, butterfly weed, and pleurisy root.

As far back as the earliest recollection extends, the root of the asclepias was employed in popular practice, as a sweat, in catarrh, rheumatism, inflammatory fevers, and, above all, in pleurisy. No medicine has, perhaps, an equal reputation among the people of the southern states in these cases, and especially in pneumonic inflammations. Nor are there wanting some respectable practitioners, who repose much confidence in it.

My experience with this medicine is sufficient to enable me to speak with some degree of confidence of its powers. As a diaphoretic, I think, it is distinguished by great certainty and permanency of operation, and has this estimable property, that it produces its effects without increasing much the force of the circulation, raising the temperature of the surface, or

* Vid. Tonics.

creating inquietude and restlessness. On these accounts, it is well suited to excite perspiration, in the forming states of most of the inflammatory diseases of winter—and is not less useful, in the same cases, at a more advanced period, after the reduction of action by bleeding, &c. The common notion of its having a peculiar efficacy in pleurisy, I am half inclined to suspect, is not altogether without foundation. Certain it is, that it very much relieves the oppression of the chest, in recent catarrh, and promotes expectoration in protracted pneumonies.

As a tonic, it has sometimes been prescribed in autumnal fevers, and still more so, in debilitated states of the stomach, attended with flatulence. It is supposed to be so serviceable in the latter case, that it is designated by the term *wind* weed, or *wind* root, in domestic practice. The powder of the root, in the dose of half a drachm, is preferred, when the medicine is directed with this view. But, in other cases, a strong infusion is used, of which as much may be drunk as the stomach will retain.

Of late, I have understood, that another species of this plant, the *asclepias syriaca*, or silk weed, or milk weed, has been found to have nearly the same properties. It is also said to be narcotic, and affords much relief in asthma, in old coughs, and even in pulmonary consumption. As one of the lactescent plants, it is not improbable, that this may, in part, be true. The dose is thirty or forty grains of the powdered root.

I have now enumerated the chief articles, usually arranged in the class of diaphoretics. But, in addition to these, there is a set of medicines, which indisputably have a close relation to the surface, as is evinced by their influence over the cutaneous affections. The medicines to which I allude, though they produce little or no perspiration, cannot, perhaps, be more appropriately introduced than in this place, and I shall, therefore, proceed with their history.

SULPHUR.

No one is entirely ignorant of the efficacy of sulphur in the diseases of the skin. The only comment I shall make on this trite application of the remedy, is, that it is necessary, in some of these cases, to use it in the shape of an unguent, as well as to give it internally. We direct, particularly in psora, the surface of the body to be anointed with the ung. sulphuris of the dispensatories, while the powder is exhibited in small doses. Without the external application, it proves so inert, that I have doubts whether it is of any service. Being, in this way, exceedingly disagreeable and inconvenient, several other remedies are, at present, substituted in private practice, which I shall hereafter mention.*

* It is said, that a combination of the sulphate of zinc with sulphur,

Nothing have I found so speedily to cure tinea capitis, as an ointment made of an ounce of sulphur and lard each, with an addition of two drachms of sal ammoniac. No cutaneous disease is sometimes more difficult to manage, than this species of eruption. I have known cases to baffle the united skill of some of the ablest practitioners. But, since using the above ointment, I have been uniformly successful.*

By Rosenstein, a writer held in some esteem, it is said, that when eruptions are repelled, they may again be restored to the surface, by the use of sulphur: in epilepsy, and other convulsive disorders, thus brought on, the practice has been found, according to him, exceedingly beneficial.

The several preparations of sulphur were once among the remedies most in vogue, in the management of catarrh, asthma, whooping cough, &c. Confidence, indeed, was so great in its virtues in these pectoral affections, that it acquired the appellation of

in the proportion of a drachm to the ounce, made into an ointment with lead, is very effectual in itch: and I have found the prescription of Clarke, of Dublin, applicable to the disease in children. It is a lotion made by pouring a quart of boiling water on an ounce of sulphur, digesting for twelve hours.

* The following prescription, which I believe was suggested to Dr. Barlow, is also useful.

R. Kali sulph: (recent prep:) ℥iii.

Sapo. Hispan: ℥i.

Aq. Calc: ℥viii.

Sp. Vin: rect: ℥ii.

M. Ft. Lotio.

anima pulmonum. To what extent this high character is deserved, I am not prepared to pronounce. Certainly the practice does not want the support of authority, and, if we advert to the properties of sulphur, we can hardly be altogether incredulous. Besides its other qualities, it, perhaps, as much as any article, opens the surface, which generally relieves the lungs.

To prevent or remove those painful spasmodic contractions of the muscles, denominated cramps, sulphur is much resorted to, and, generally, it is advised to grasp a roll of brimstone, during the paroxysm. How far this popular expedient is salutary, I cannot pretend to say, though I have done good, in numerous instances, by recommending pads of sulphur to be worn on the part prone to such attacks, while the medicine is taken internally. I once had under my care, a man, who, for years, had been subject to cramps of the abdominal muscles, recurring several times in the day, and so violently, as to draw him double, attended with a degree of pain, scarcely to be endured. Having tried almost every other measure, I suggested the use of the pad, which always prevented or relieved an attack, but on taking it off, the cramps speedily returned. By wearing it, however, for some weeks steadily, he was ultimately cured.

The sulphur is a well-known remedy in paralysis, and, perhaps, ought not to be disregarded. On a former occasion, I dwelt on the efficacy of purging in

this disease. Yet, it does not appear, that we are to ascribe all the effects of sulphur to this property. Many other articles, which much more effectually evacuate the bowels, are not so useful, and, indeed, I am not quite sure, whether we do not sometimes attain as much, when it does not operate as an aperient. I speak of the protracted states of the disease.

I shall not repeat here, what I formerly said, of the utility of this medicine in gout and rheumatism. It will be sufficient merely to mention, that, in proportion as I employ it, especially in the latter disease, my confidence in its powers is strengthened.*

We have lately had the practice revived of treating diseases by the *fumes* of sulphur, and the success attending it seems so great as to require, that it should not be overlooked. The earliest application of the remedy was by Glauber, who, however, restricted it to the cure of psora, or nearly similar affections, and, it is said, that, ever since his time, it has been continued, more or less, by the German physicians.

By the celebrated Frank, of Vienna, we had, some years ago, a distinct recommendation of the practice in itch—which, probably, led M. Galés, of Paris, to engage in the inquiry, as he has since done, with great ardour and success. To him belongs the credit of contriving the apparatus for the convenient administration of the fumes, as well as for determining the utility of the measure in a great variety of other diseases. Connected with a large hospital, he has had

* Tonics.

the most ample opportunities of testing the remedy : and the result of his numerous trials is, that it has a great control over the whole of the chronic cutaneous affections, as psora, tetter, tinea capitis, and prurigo, to which may be added, atonic gout, rheumatism, palsy, &c. Committees, appointed by several of the most respectable medical bodies of the French metropolis, to investigate the statements of M. Galés, have reported entirely in favour of their accuracy.

The same ground has, within a few months past, been gone over by Dr. Emerson, of this city, and with results strongly confirmatory. He tells us, in a well written communication on the subject,* that his expectations of the efficacy of the fumes have been more than realised, and that, besides the diseases in which it had already been successfully tried, he has reason to believe, that it will be useful in prurigo formicans, a most intractable affection—in all the forms of scrofula—in secondary and pseudo syphilis—in various kinds of ulcers—chronic hepatitis, amenorrhœa, chlorosis, chorea sancti viti, &c. The weight of Dr. Emerson's character entitles these representations to much respect, and would, by me, independently of all other evidence, be received with confidence.

Being in fumes much more minutely divided than in any other state, it is presumable, indeed, that sulphur might prove more active than when applied by

* Vid. Philadelphia Journal of the Medical and Physical Sciences, No. V.

frictions, or in any other shape or mode. To the small portion of acid which is formed in the process, I cannot ascribe any share of the effect. In the application of the remedy, the patient is enclosed up to the chin, naked, in a case or chamber, into which the fumes are introduced, and this operation is continued for an hour or longer, if it can be comfortably endured.*

GUAIAACUM OFFICINALE.

This is a tree indigenous of the West Indies. The wood, and gum resin procured by exudation, are the parts employed in medicine.† Guaiacum is a warm stimulant, proving, for the most part, diaphoretic, sometimes, however, diuretic, and even purgative, in large doses.

It was originally introduced as a remedy in the treatment of lues venerea, and for a long time enjoyed uninterrupted confidence. Before the discovery of the utility of mercury, it was, indeed, among the chief means employed in this disease. But, whatever may be its powers, in relieving some of the secondary symptoms, as ulcers, eruptions, and nodes, or its controul over the mercurial and syphiloid affections, it is, probably, inefficient in genuine syphilis itself.

* Vid. Cathartics and Tonics.

† Mr. Hatchet has lately demonstrated, that this is a substance *sui generis*.

This has long been the settled opinion of the ablest practitioners.*

But, though we are compelled to withdraw our confidence in the anti-venereal powers of guaiacum, there are some other purposes to which it may be applied. To the subdued forms of rheumatism, it is thought singularly applicable, and, probably, is more employed in such cases than any other remedy. The ordinary dose, however, is generally insufficient. Not less than half an ounce, and often an ounce, of the tincture should be prescribed, and the proper time for its exhibition is on going to bed. Its effects are very much promoted, by copious draughts of any warm beverage. Given in so large a quantity, and with the auxiliary means suggested, it seldom fails of producing diaphoresis, and of affording essential relief.

In the arthritic affections, guaiacum has also been used. It was first resorted to, in these cases, by a writer, who proclaimed its efficacy in so confident a tone, that it excited, for a time, a good deal of attention throughout Europe. But, when it came to be more generally tried, these high expectations were not realized, though it is still considered a useful remedy, in some of the irregular shapes of the disease. Wandering gout not unfrequently displays itself in the stomach, in the form of colic, or some other painful spasmodic affection, and here I have often prescribed it with advantage, to alleviate the pending paroxysm,

* Vid. Pearson on the Various Articles in the Cure of Lues Venerea.

as well as to prevent its recurrence. In the secondary stages of colica pictonum, it once had considerable reputation, whether on any solid grounds I cannot say, having never tried it.

On the close connection between a disordered condition of the stomach, and many of the complaints of the eye, I need not again insist. As I inquire, observe, and reflect on this subject, so have I increased reason to confide in the correctness of this view. Every practitioner has probably seen inveterate cases of ophthalmia, proceeding altogether from a gouty or rheumatic state of the stomach, yielding only to remedies addressed directly to this viscus, among which I have found sulphur or guaiacum most effectual. But we have another morbid affection of the eye, of gastric origin, hitherto not sufficiently noticed, where, without any external inflammation, or, if it exist, so slight as hardly to be perceived, there is great sensibility, with intolerance of light, sometimes very acute lancinating pain through the ball, though, more generally, the sensation is that of a dull, obtuse ache, attended with much heat and aridity of surface, which, whatever may be its nature, is wholly independent of the cause above mentioned, and is very successfully treated by guaiacum. Cases, such as I have described, are not of very common occurrence. But I have had several under my own care, or in consultation, and never knew one to be cured, or even much benefited, by any means, except the remedy just mentioned.

Though more decidedly operating on the surface, guaiacum occasionally proves so actively diuretic, as to remove dropsical effusions with much success. I am told by Professor Gibson, that he greatly relies on it in these cases, and has found it particularly beneficial in ascites. The volatile tincture he prefers, and in the dose of a table spoonful.

Guaiacum is prepared in different modes. The wood may be made into a strong decoction, of which a quart or more should be daily consumed. Of the substance, improperly called a gum-resin, there are two officinal tinctures, the one, a simple solution in alcohol, and the other with an addition of the carbonate of ammonia. The last, or volatile tincture, is decidedly preferable. The dose, of these tinctures, is, in most instances, about a tea-spoonful, to be occasionally repeated. Where there is much excitement, the inspissated substance may be directed in powder mixed with loaf-sugar. Ten or twenty grains are the average quantity taken at a time.*

* *The Chelsea Pensioner*: "An empirical remedy for rheumatism is well known under this name. It is said to be the prescription of a Chelsea pensioner, by which Lord Amherst was cured. The following is its composition:

"Gum guaiac. \mathfrak{z} i.—Powdered rhubarb \mathfrak{z} ij.—Cream of Tartar \mathfrak{z} j.—Flowers of sulphur \mathfrak{z} ij.—one nutmeg finely powdered, made into an electuary, with one pound of clarified honey. Two large spoonsful, to be taken night and morning."—*Paris's Pharmacologia*.

DAPHNE MEZEREUM.

The mezereon is a shrub, growing on the Alps and Pyrenees. The bark of the root, which is only used, is acrid to the taste, and of a spicy odour, having the essential properties of guaiacum, and has been converted pretty much to the same purposes in practice. It is a stimulating diaphoretic, and, occasionally, proves also diuretic and purgative: is a common remedy in rheumatism, in chronic cutaneous affections, and was formerly employed in syphilis. Its reputation at present, in this latter disease, rests on the same foundation as the preceding article.* It is rarely prescribed, except in some compound decoction.

SMILAX SARSAPARILLA.

This plant is a native of the West Indies, and, as I have understood, of a section of our own country. As a medicine, its fortune has been exceedingly fluctuating. When originally introduced into the materia

* "From all that I have been able to collect, in the course of many years observation, I feel myself authorized to assert unequivocally, that the mezereon has not the power of curing the venereal disease, in any one stage, or under any one form," *Pearson*.

medica, it was thought a sovereign cure for the venereal disease. But, in a short time, it lost nearly all reputation. By Sir William Fordyce and Mr. Hunter, its use was once more revived, as one of the best remedies in the sequelæ of syphilis, whether proceeding from a remnant of contamination, or the abuse of mercury. It again sank into discredit, at least as an anti-venereal medicine, in which it continued till the late notions relative to syphilis arose, on which occasion it was brought forward with, perhaps, a higher appreciation of its powers than it had ever before received. It being my intention hereafter to go into this subject pretty fully, I shall now make no further remarks concerning it. By every description of practitioners it is prescribed in venereal and scrofulous sores of an ill condition—in cutaneous affections—in ordinary and venereal rheumatism—sometimes in the declining stages of gout, when the joints are left rigid and swollen—and to restrain the undue action of mercury, or correct its consequences. That it displays the properties of its associate articles, and often in a higher degree, seems to be the prevalent opinion at the present moment. Like guaiacum, it sometimes proves diuretic, and may be used accordingly.

It may be prepared in simple decoction, which may be taken *ad libitum*, though it is now more commonly prescribed in combination with various other substances hereafter to be mentioned. Having ascertained that the virtue of this article is in the *bark*

of the roots, which is very perishable, care ought to be taken to select sound specimens.*

LAURUS SASSAFRAS.

The sassafras is indigenous, and may be found every where within our territories. The tree, in all its parts, is medicinal. Generally, however, the bark of the root, or the flowers, are selected for the purpose, both of which are highly aromatic, and agreeable to the taste. In decoction, the sassafras may be taken freely, though the best mode of pre-

* Besides the officinal, there are several preparations into which the sarsaparilla enters deserving of attention. The following, derived from an old French Pharmacopœia, is much used in this city, and approaches closely, as well in its sensible as remedial qualities, to *Sivaïm's Pâ-*
ment.

Sirup de Cusiniér.

R. Sarsap. ℥ii.
 Flor. Borag. ℥ii.
 — Rosm.
 Fol. Senn.
 Sem. Anis. āā ℥ii.
 Sacch.
 Mel. āā ℥ii.

To be made into a syrup, according to the common process, and add 1 gr. of corros. sub. to the ℥b, as may be demanded.

In some instances, the guaiacum may be added, in the proportion of 5 or 6 oz.—and, to give a pleasant odour, ℥ss of Liq. Anodyn. Hoffman. The dose is an ounce, several times a day.

scribing it, is in strong infusion, with the addition of sugar and milk. Thus prepared, much of it is consumed as a substitute for the cheaper teas, by the poorer people of the country. Endued with the same properties, sassafras is applicable to all the cases in which the preceding medicines are used. Together with these, it enters as an ingredient into the decoctum lusitanicum, or Lisbon diet drink.*††

* R. Rad. sarsaparillæ, Ligni sassaf., Santal. rub., Guaiac., āā ℥iii., Cort. rad. mezereon ℥i., Semin. coriand. ℥vi. Coq. in Aq. font. ℔xx. ad. ℔ x. Sumat ℔ ss. ter quaterque in dies. To this formula, some one of the antimonials is sometimes added.

† *Godfrey's Cordial.* The composition of this nostrum is as follows: Take and infuse ℥ ix. of sassafras, and of the seeds of carraway, coriander, and anise, each ℥ j. in six pints of water—sinmer the mixture till it is reduced to four pints—then add lb. iv. of treacle, and boil the whole for a few minutes: when cold, add ℥ iij. of the tincture of opium.

Paris's Pharmacologia.

‡ The pith of the young branches of the sassafras, when infused in water, becomes mucilaginous, which is drunk by the people of the country in dysentery, and the nephritic affections. The best application of it, however, is to inflamed eyes, where it proves, indeed, exceedingly serviceable:

JUNIPERUS SABINA.

Though not a native, the savin is cultivated in many parts of the United States. It is an evergreen of the cedar species, found, most abundantly, in the south of Europe.

Baffled in my attempts to cure some of the forms of chronic rheumatism with the ordinary remedies, I was early led, in consequence of my speculative notions as to the powers of this medicine, to try it in this disease. During the period which has subsequently elapsed, I have prescribed it very extensively, both in public and private practice. From the result of my numerous trials with it, I hope it will not be deemed the language of enthusiasm when I declare, that I hold it to be entitled to a place among the very best of the remedies in chronic rheumatism. Yet, for its successful application, it requires a nice discrimination in the selection of the proper cases. My enlarged experience with the medicine, has taught me some degree of certainty in its use. It is still, however, not easy, by any general description, to impart the same sort of *tact* or knowledge. Those who are conversant with clinical practice, must have remarked, that in some of the cases of rheumatism, there is a coldness of the surface, and especially of the lower extremities, which are dry, or covered with

a clammy sweat. Connected with this state, we have also tumefaction and rigidity of the joints, amounting, sometimes, even to the loss of motion, accompanied by pains excessively acute, always aggravated by the vicissitudes of weather, and even by the slight exposure arising from any accidental withdrawing of the covering during sleep. Cases of this description are readily to be met with in all large receptacles of the sick, and especially in the severer climates, continuing for a great length of time, with no material variation, completely resisting the ordinary plan of treatment.

No doubt can exist of the condition of the parts, under such circumstances. It is manifest, that the circulation is carried on languidly, from the debility and exhaustion of the extreme vessels, by which they are thrown occasionally into spasms, whenever, indeed, external heat, or internal stimuli, do not contribute to invigorate their action, and support the natural tone. That the pain, in this case, is produced by a species of irregular convulsive motion, and not by inflammation, is conclusively proved, by the universally acknowledged fact, of the complaint rarely going off by any of the usual terminations of this latter process. The joints in rheumatic limbs will often appear puffed, or swollen, for several months in succession, without effusion, suppuration, &c. taking place in the slightest degree.

Conformably to this pathological view is the established practice. No one, in this case, prescribes cold or other applications of similar tendencies : every

practitioner, whatever may be his theoretical notions, concurs in recommending the very opposite course. By the common consent of all, the treatment is made to consist of the various vesicating or rubefacient remedies, while we endeavour to rekindle the general excitement, by camphor, ammonia, turpentine, cantharides, seneka, arum, mezereon, sarsaparilla, guaiacum, with an infinity of combinations, of which opium constitutes the basis.

From its known properties, it was reasonable to presume, that the savin would prove serviceable in this precise form of rheumatism. Its primary action is, to heat and stimulate the whole system, producing, particularly, a glow on the surface, with much itching and sometimes miliary eruptions. The pulse, previously to the exhibition of the medicine, commonly small, weak, and accelerated, now becomes full, active, and comparatively slow. No portion of the body, indeed, escapes its wide pervading operation, every function being more or less invigorated, and especially some of the secretory offices, as the perspiratory, urinary, catamenial, and, perhaps, the seminal.

Contrary to a very uniform law of the animal economy, by which it seems to be ordained, that the vigour of the arterial and lymphatic apparatus should be in an inverse ratio, we have in this instance evidence, in the speedy removal of the chalky dispositions, and of the various morbid growths incident to the disease, of absorption being actively promoted.

Encouraged by the success which attended the re-

medy in the preceding description of cases, I was induced to apply it to the cure of what is denominated syphilitic rheumatism, and with conspicuous advantage. The difficulty often experienced in the management of this form of the disease, is universally confessed, and which is probably owing to the wrong views entertained of its nature. I believe, that, instead of proceeding from a remnant of venereal contamination, as is generally supposed, it has nearly always its source in the abuse of mercury. Nor am I singular in this opinion, though I take to myself the credit of having first promulgated it in this city, and of most steadily acting upon it in practice.

Few persons, perhaps, are more sensible than myself, of the illusions which naturally arise with respect to new remedies. The sources of error here are numerous, and so seductive, that an entire escape from them rarely happens. It is possible that I, also, may be deceived in the present instance, and therefore have stated too strongly the powers of this article. But so far am I from believing it, that I shall venture the prediction, that, at no distant period, my observations will be established, and the medicine rise in reputation, by a more extensive practical application of it.

That the savin is prescribed in gout, I have already learnt. By professor Hufeland, one of the most distinguished men now on the continent of Europe, who seems to have introduced it in this complaint, we are told, that it imparts tone to the alimentary canal, and removes the nausea, acidity, and flatulence, incident

to the atonic state of the disease. Nor is it, according to him, less useful in arthritic head-ache.

By some other practitioners, it is recommended as having done good in podagra, or regular gout, averring, that it alleviates the pain, and breaks the force of the paroxysm. Of my own knowledge, I can say nothing of its efficacy under such circumstances, though I should presume it to be a very inappropriate and hazardous remedy. To rheumatic gout, a mixed state of disease, it will probably be found to be better suited.

In no application of the savin which I have hitherto made in rheumatism, was I able to perceive any immediate advantage from it. The system must be fully under its impression before the disease begins to yield, even in a slight degree. Commencing with twelve or fifteen grains of the powdered leaves, three times a day, my rule is, gradually to increase the dose, till some positive effect is manifested, to produce which, three or four times the quantity I have mentioned, are sometimes demanded. Nor ought we too suddenly to withdraw the medicine in despair of its being useful. To accomplish a cure of protracted rheumatism, especially, it must be continued for several weeks. No matter how trivial the improvement may be, at first, we should not be discouraged. The extraordinary success which I have seen result from its long and steady exhibition, entitles me to recommend, very confidently, an imitation of the same course.*

* Vid. Emmenagogues.

SAPONARIA OFFICINALIS.

This is one of the European plants which we have *naturalized*, and now grows abundantly in the United States. The *soap-wort*, so called from a decoction of the leaves yielding a saponaceous matter, I have never employed. It is, however, highly commended by Alibert in venereal affections, resisting mercury—in scaly tetter, &c. But its best established reputation is in chronic rheumatism, syphilitic or otherwise, and in painful atonic gout. It is usually given in decoction, either of the leaves or roots, the latter being rather more active.

XANTHOXYLUM FRAXINEUM.

The prickly ash is a shrub of some size, indigenous to this country. Nearly every part of it, the bark, leaves, and the rind of the capsule, is pungent and aromatic, having, in some degree, the fragrance of the lemon. Chewed, it proves to be an active masticatory, and salivation is said sometimes to happen from the internal exhibition of it. In its more general medicinal properties, it resembles the class of articles with which I have associated it, and is applicable to similar cases. The use of it, however, in this

country, is pretty much restricted to chronic rheumatism, where it is occasionally serviceable. But in Europe it has been extended to the treatment of malignant ulcers.

The bark may be exhibited in decoction or powder, in the dose of a gill, or twenty or thirty grains.

RHUS TOXICODENDRON.

This is an indigenous plant, better known by the title of poison oak, or swamp sumach, supposed to have the property, in a degree, of the Bohun Upas, of poisoning by an exhalation from its leaves, when nearly approached. Granting this to be unfounded, which it probably is, there can be no doubt, when handled, they produce a violent inflammation of the skin, resembling the worst forms of erysipelas, and which sometimes returns, even at a distant interval, without any fresh exposure. The analogy extends further. Nearly the same remedies are applicable to both cases.*

Exhibited internally, its properties are so little ascertained, that I have been perplexed as to the location of the article. We are told, however, that it is somewhat narcotic, displaying much of its effects on the surface, and hence I have given it the present position. Much has been said of late of its efficacy in

* The corrosive sublimate in weak dilution, has been found particularly serviceable as a lotion in allaying the inflammation from this plant.

the herpetic affections, though still more in paralysis, and particularly by a late writer, who relates a number of cases essentially benefited by it.* Formerly, it was used also in consumption, with what success does not distinctly appear. Either the powder of the leaves or an extract is used, of the former of which the dose is two or three grains, and of the latter much larger, to be repeated several times a day, and increased till some sensible effect is manifested.

* Alderson's Essay on the *Rhus Toxicodendron*.

SECTION XIII.

The External Means of producing Perspiration.

By simple friction, long continued, a pretty copious discharge of perspiration will sometimes take place. The usual means, however, to effect this purpose, is heat, applied either through a dry or moist medium. By the ancients a vast deal of refinement was introduced into this process—and among the Oriental, as well as some of the European nations, even now, it constitutes one of the most expensive luxuries. The splendid establishments for this purpose contain, or did contain, a series of contrivances, by which temperature might be conveniently graduated to every exigency. We have no such arrangements, and are content with a few simple means, exceedingly rude and defective. It is the common practice, where we wish to induce sweating by stimulating the surface, to resort to heated bricks, or bottles filled with boiling water, which are put to the soles of the feet, or some other portion of the lower extremities. To co-

operate with these, the patient is covered with more than an ordinary quantity of clothing, and warm beverages are liberally exhibited. Prompt and profuse diaphoresis being demanded, the local applications I have mentioned, should also be placed between the thighs, on each side of the trunk, and under the arm-pits, by which the effect is greatly increased. Yet it will, sometimes, be found more convenient to substitute, in place of bricks or bottles, bags filled with hot salt, or oats, or sand, or ashes. By their softness and flexibility, they are readily accommodated to the shape and contour of the part—prove more comfortable, and are especially adapted to relieve topical pains.

In the inflammatory cases, we usually direct vapour or steam in place of dry heat, as safer and more efficacious. It is particularly useful in the incipient or advanced stages of the phlegmasiæ, and in all other states of the system, where sweating is indicated, though the propriety of inducing it by stimulating remedies may be questionable. Nor is it less easy of attainment. There has lately been invented a very simple machine for the purpose. But if this cannot be had, pouring vinegar or ardent spirits on hot bricks, and, while the vapour is escaping, introducing them, wrapt up in flannel, under the bed clothes, will answer nearly as well. Three or four such applications speedily cause a relaxation of the surface, and excite an abundant diaphoresis. Nearly the same effect is occasioned by immersing the whole body in a bath, the temperature of which should be so high as

to produce a decided sensation of warmth. Though the natural temperature of the human species is about ninety-eight degrees, owing to the cooling process constantly taking place on the surface, it is here considerably lower, and hence we feel the sensation of warmth, at several points below animal heat. It is this circumstance which renders it difficult to adjust a precise standard: perhaps, however, we may not err much by fixing it from ninety-two to ninety-six degrees.

A bath of this description is stimulant, increasing the force and activity of the circulation, and particularly in the extreme vessels, rendering them full and turgid, and inducing a state of redness approaching to inflammation. These primary effects, however, are partly counteracted, by the relaxation and perspiration which speedily follow—to promote which, the patient, after being carefully wiped dry, ought to be replaced in bed, and to take some warm drink, as any of the herb teas, or lemonade, or wine whey, as the case may be.

From the extensive sentient surface exposed to the impression of this process, it must be productive of very positive effects, and is prescribed in a variety of cases. But, owing to the intimate connection subsisting between the alimentary canal and the surface of the body, it is found, perhaps, most useful in the affections of the stomach and bowels, whether of an acute or chronic nature. Few remedies are much more resorted to in colic, and not unfrequently in en-

teritis, cholera, and dysentery. The inordinate irritability of the stomach in gastritis, is sometimes allayed by the warm bath, and its efficacy is fully attested in several of the forms of dyspepsia, and not less so in the atonic fluxes. Nephritis affords another instance in which it is greatly employed, and I may add dysmenorrhœa, as being much relieved by it.

Among the chronic complaints to which it is most applicable, the weaker states of rheumatism and paralysis may be named. These cases are marked by great deficiency of temperature, a pallid skin, and other evidences of a debilitated circulation: and here the power of the bath may be improved, by adding salt, mustard, or Cayenne pepper, as well as by raising the temperature several degrees higher than the point I have mentioned. Nor should frictions afterwards be neglected. Efficacious, however, as the warm bath proves, under the preceding circumstances, to adults, it is still more so to children, and may, in them, be more safely extended to the treatment of the febrile, and indisputably so to the convulsive affections, being, in the latter instances, followed by tranquillity and sleep. When a general bath cannot be procured, a pediluvium or semicupium is the ordinary resource. Even this partial bathing is salutary, both as a diaphoretic, and as means of counteraction by revulsion, especially in some of the complaints of the head. Directed with this view, the utility of it may be heightened by dissolving in the water any of the stimulant articles recently enumerated. As a substitute,

or indeed as answering better in some instances, sponging the surface with tepid water, may be employed. By cleansing and softening the skin, diaphoresis is promoted, and excess of temperature removed. It is affirmed, that an addition of a small portion of the salt of tartar, increases the effect, which it can only do, by rendering more complete the process of purification of the surface.

To some cases, a bath of less warmth is better suited. This is called a tepid bath, and is directed of the temperature of about ninety degrees, though, from the different susceptibilities of patients, it cannot be definitely fixed. It will hence be right, to consult the feelings of the individual, and so to regulate the temperature, that it may impart a slight and agreeable sensation. In the chronic affections of the skin, it is mostly prescribed. It is calculated to recruit the energies of the system, when exhausted by fatigue or watchfulness, and has, sometimes, been found not less advantageous, in certain forms of protracted rheumatism, gout, paralysis, chorea, and other convulsive or spasmodic complaints.

Though the application of heat to the surface, in the above mode, will generally excite sweating, it does not uniformly. There are indeed, conditions in which it is ascertained rather to impede than facilitate the process, as in the early stage of typhous fever, scarlatina, &c. These cases are sometimes attended by great heat of surface, aggravated by all the means enumerated, to create perspiration, and to reduce

animal temperature. Cold, variously applied, more effectually answers the purpose. The ancients were well acquainted with this fact. Celsus directs large draughts of the coldest water in ardent fevers, and dwells with emphasis on the highly beneficial consequences. "The patient," says he, "falls into a sound sleep, the heat remits, and a free perspiration ensues, though he had previously suffered much from thirst, heat, and restlessness." In the revolutions of our science, the practice alluded to, seems to have been rejected, or lost sight of, for many centuries. Nearly a hundred years ago, however, an attempt was made to revive it by a writer, who entertained such extravagant notions of its efficacy in the inflammatory fevers, that he denominated cold water *febrifugum magnum*. Yet the remedy in no one of its applications gained much ground, antecedently to the appearance of the celebrated work of Currie, since which time its utility has been fully confirmed by the concurrent experience of many of the most distinguished practitioners in various sections of the world.

This mode of treating disease has not been generally adopted in the United States, certainly not to the same extent as in Britain, and her colonial dependencies in the East and West Indies, which may, in part, be owing to our attachment to the lancet, and other directly depleting remedies, operating, to a certain degree, in a similar way. Cold ablutions are sparingly used in our autumnal fevers, to allay heat of the skin, and ice is habitually applied in the inflammatory

attacks of the head. But in the European hospitals which I attended, nothing was more common than to see patients, in the early stage of typhous fever, placed under a shower bath, or to have water dashed upon them. Nearly the same course was pursued in scarlatina, and in the whole of the complaints, in short, where a heated surface exists. The effect, most commonly, was a free perspiration, followed, as is usual, by highly beneficial tendencies. Yet in the exanthemata, the practice, to such extent, can hardly be justified from the danger of repelling the eruption. Cases of death are reported from it, and I have seen it, in several instances, productive of mischief.

It is obvious, indeed, that a remedial process so active as this, must not be rashly or indiscriminately employed under any circumstances. The precautions to be observed in its use, have been clearly indicated in the work to which I have referred. Currie says, that affusion with cold water may be resorted to, "whenever the heat of the body is steadily above the natural standard, when there is no sense of chilliness, and especially when there is no general or profuse perspiration," from which, however, must be excepted, the cases attended with much local congestion, and particularly of the lungs. The principle on which he supposes the remedy to act, is merely by the abstraction of an excess of heat from the surface. But, a very different view has been taken of this point, by a writer, who, if he is sometimes seduced into apparent extravagance, by an ardent enthusiasm, is eminently

distinguished by the force and originality of his opinions in theory and practice. My allusion is to Dr. Robert Jackson, the author of various works on fever, which, though, till lately, very harshly treated in England, have always been received in this country as standard authorities. The writings of no one exhibit so much of the American modes of thinking and of practice, and have contributed greatly to the establishment of our medical system. Cold applications to the surface, he maintains, on the contrary, are a power, making a strong and general impression on the system, by which the existing morbid actions are subverted, or essentially changed, and which, according to him, is effected independently of the diminution of temperature. In prescribing the process, all that he insists upon, as important to be attended to, is, the *evidence of a susceptible condition*—and, where such is wanting, he attempts previously to restore it by frictions, the warm bath, &c. Considering also, a highly excited or inflammatory state as not well suited, he advises venesection, and other evacuations, as preliminary measures of reduction.

Directed in the use of these applications by the precepts of Currie, I have not ventured, on any occasion, to imitate the other course, though never for a moment have I believed, that the remedy operates simply by lessening the heat of the skin.

Cold water to the surface, is prescribed in the shape of ablution, aspersion, or affusion, and the cases to which these several modes are best adapted, will

occur, for the most part, to the practitioner, without any precise designation. As a general rule, I shall only observe, that an application by the sponge I have found most convenient in practice—and that it is safer, and, probably, no less effectual. In closing these desultory observations, I cannot forbear to recommend, in the strongest terms, an attentive perusal of the writings on this subject, to which I have referred.

SECTION XIV.

Diuretica or Diuretics.

THESE are medicines which promote the secretion of urine directly or indirectly. As respects their mode of operation, some difference of opinion has always existed. It was formerly believed, and is even now, by those who retain any of the prejudices of the humoral pathology, that the articles of this class enter the circulation, with an entire retention of their powers, and act directly on the kidneys. Entertaining this impression, diuretics were much prescribed at the time, with a view of expelling certain peccant matters, imagined to be the cause of particular diseases. But, whatever may have been the utility of the practice, under certain circumstances, there can be no doubt of the inaccuracy of the views by which it was dictated.

Having so fully stated my opinion of the *modus operandi* of medicines, I shall not here resume the discussion. They all act on the same principle, by

creating a local impression, which is transmitted to one or more parts, or over the whole system, according to the properties of the article, and the relations of the spot primarily affected. Be it admitted that a single medicine operates in this way, and the concession must be extended to the whole. Where, in the economy of nature, is there an instance of two such directly opposite modes of accomplishing the same end? As the emotion of terror, or the sudden sensation of cold, *neither of which can be presumed to be absorbed*, produces diuresis, so does every thing else. But to return from this digression.

An increase of the urinary discharge may take place, either by stimulating the kidneys, or by an invigoration of the powers of absorption, as in dropsical effusions. Diuretics are, therefore, of two species, though each operates, as already explained, by an action primarily on the stomach, extended to the lymphatics, or kidneys, according to the affinity of the article to the one or the other of the parts.

As the effect of these remedies is not a little controuled by certain circumstances, it is right that such should be indicated. By a law of the animal economy, it would seem, that the discharge from the skin and the kidneys, is in an inverse proportion. Whatever increases perspiration, will, most commonly, diminish the urinary secretion. It is on this account, that, in the administration of diuretics, we ought to avoid the application of external heat, and, as much as possible, keep the patient out of bed. Cold to the surface, on

the contrary, heightens their effects, and, when admissible, may be resorted to with very great advantage. This, indeed, is so strikingly true, that exposure to cold air, or walking on a cold floor, or immersing the feet in cold water, or cold applications to the pubes, will often excite the action of the urinary organs, when every thing else has failed.

The operation of diuretics is also promoted by diluent drinks. It is obvious, that, much liquid being taken into the stomach, it must be eliminated by perspiration, or urine, or internal exhalation. There are states of the system, in which it has been thought doubtful, whether it would be prudent to endeavour to excite an increased flow of urine by such means. It sometimes happens, that an excess of fluids, instead of passing off by the natural emunctories, is effused into some one of the cavities of the body, or cellular membrane, giving rise to dropsy, or, if it previously exist, aggravating the disease. An apprehension of this sort, has so strongly prevailed with some practitioners, as to lead them, under such circumstances, to enjoin, as much as possible, an abstinence from drinking, and it is alleged, that such abstinence has, in some instances, effected cures. But this statement, I suspect, will not bear a very rigorous scrutiny. Facts to this purport are of rare occurrence, and the numerous examples of the total failure of the practice, have led finally to its abandonment. It is, indeed, a very painful and difficult task, to resist the vehement thirst, which usually attends

this disease. Drinks, in these cases, most fortunately, seem to promote the urinary discharge, and, of course, to reduce the degree of effusion. The abstinence, on the contrary, which has been thought so important, conduces manifestly to the inactivity of the kidneys, and to a correspondent accumulation of water.*

By observing their beneficial tendency, the practice has, for some time, become very general, to endeavour to invigorate the action of diuretics, by the copious use of diluent beverages. Common water often answers the purpose, though water, impregnated with the vegetable acids,—or the tea of the juniper berry,—or an infusion of the scabious,—or, in certain cases, very weak gin and water, will be found of superior efficacy. Even by the use of such drinks alone, cures of dropsy have been effected, on the evidence of Sir George Baker, of Sir Francis Milman, and of Cullen, not to mention other names, of nearly equal respectability. The propriety, indeed, of indulging a patient in the use of drink, is now so incontestably settled, by the concurrent approbation of the ablest practitioners, that it would be superfluous to attempt to enforce it by any theoretical deductions, or by a recurrence to additional authorities. Even admitting, that the practice proves occasionally preju-

“I have frequently found, that a very entire abstinence from drinking, by diminishing the quantity of urine, allowed the secretories of the kidneys to fall into a contracted state, so that the quantity of urine voided was still further diminished, and, as I judged, tended to increase the effusion, and, thereby, to aggravate the disease.”

CULLEN'S *Mat. Med.*

dicial, such instances can be deemed exceptions only to a very general rule, and the mischief is so easily detected, as to be at once guarded against, or arrested in its progress. When the drinks, instead of answering the purpose of their administration, by taking a wrong direction, serve only to increase effusion, and enlarge dropsical distension, they will, by every physician of any sagacity, be timely discontinued, or restrained. Yet the secretory office of the kidney being once fully established, it will be found best, on the whole, to reduce the quantity of drinks, and, in the progress of a cure, to recur again to the full measure or otherwise, as the state of the function may demand.

The action of diuretics, is, moreover, promoted, by the direct reduction of articial action. The blood vessels and lymphatics are, to a certain extent, antagonising powers, and, while the former retain their force, the functions of the latter are feebly exercised. No one, indeed, can have failed to observe the activity of absorption in most cases of debilitated circulation, and how imperfectly it proceeds where the pulse is febrile or excited. Instructed by this very obvious fact, we should always, in the use of diuretics, watch attentively the state of the system, and duly regulate it, by occasionally recurring to venesection, purging, or other measures of depletion.*

* Judging from the great praise which M. Majendie has received for his recent experiments illustrative of this point, it would seem, that, in a physiological as well as a practical view, it had escaped attention in Europe.

SECTION XIV.*

The Practical Application of Diuretics.

DIURETICS have been recommended in many diseases, though it is in the several forms of dropsy, that they display their best powers, and are most commonly employed. The manner in which they operate, here, has been a matter of doubt and speculation. To some it is inexplicable how any evacuation by the kidneys, can remove an accumulation of fluids in the cavities or tissues of the body. As already stated, there are two sorts of diuretics, the one having an immediate relation to the urinary organs, and the other to the lymphatic system—and, in the cases alluded to, it is to the latter we are chiefly to ascribe the effect.

The use of diuretics is extended, so as very generally to embrace the diseases of the urinary organs. There is, indeed, scarcely any of these affections, in which some one of this set of articles is not

occasionally prescribed, as affording the best means of relief.

Their utility in certain states of nephritis is a matter so well known, and universally admitted, that little need be said on the subject. Yet, these cases are exceedingly different, and connected with such opposite conditions of the system, that, for their successful management, some nicety of discrimination is required, in the selection of the proper article. Equally do these remarks apply to the affections of the urinary bladder, being also various, and exacting very dissimilar remedies. To point out now, with any minuteness, the relation of the several articles of this class of medicines, to the cases of disease to which I have alluded, would be only an anticipation of what can be much better done, when I arrive at the consideration of particular diuretics.

As a part of the general management of gout, diuretics are worthy of attention. It is a common remark, that discharges of urine of a certain character, sometimes prove critical in the disease. My own observations confirming this fact, I have accordingly acted upon it, and with advantage. Where this natural tendency is observable, we should, therefore, promote it by a recourse to the appropriate means. The close analogy between rheumatism and gout, in their pathology, as well as treatment, obviously dictates a similar course in both instances. What, however, I have said above, is, in every respect, perhaps, still more applicable to the former disease. It is in it,

that the critical disposition alluded to oftener occurs, and the utility of the process of cure is more conspicuously manifested.

No slender confidence was reposed, at one time, in diuretics, in the disorders of the lungs, whether of an acute or chronic nature.

"In omnibus morbis pectoris ad urinam spectandum."

This is the language of a distinguished writer, by which he meant to express the importance of attending to the appearance, as well as to the promotion of the urinary discharge, in these cases. Considering how much and variously this secretion is affected by morbid impressions, we do, certainly, in the present state of medical refinement, improperly overlook it, as well in forming our estimates of disease, as in furnishing a guide to the cure.

By a writer of great intelligence,* it has lately been shown, and, I think, with sufficient probability, that the urine, at least in dropsy, affords among the most unerring criteria of the several states of the disease, and, of course, the leading indications of treatment.

1. It is affirmed, that, in dropsies of high action, the urine will always coagulate by heat, or nitrous acid, like the serum of the blood.

2. That dropsy associated with visceral unsound-

* Blackall on Dropsies.

ness, is characterised by urine scanty, and high coloured, loaded with red sediment, and depositing nothing on the application of heat.

3. That in dropsies of feeble action, the urine is scanty and pale, not coagulable, and without sediment.

There are some other indications to be deduced from this secretion, deserving attention. It is generally deficient and deep coloured, in all the inflammatory states of the system, and directly the reverse, or copious and pellucid, in cerebral and nervous irritations. Loaded with saccharine matter, or of a milky colour, it shows much derangement in the chylopoietic apparatus, and, continuing, is often followed by confirmed diabetes. Excepting in the affections of the brain and nerves, free discharges of it, in the advanced stages of acute diseases, are critical, and depositing a lateritious sediment, denote, with some certainty, the approach of convalescence, in autumnal fevers, and in gout and rheumatism particularly. Much more might be said on this subject, in a proper place. But I must dismiss it, with a few remarks in relation to the calculous affections. It is to be regretted that more attention has not been paid to the urine in these cases. Even from imperfect observation some useful information has been collected, to aid us in the determination of the nature of the gravel or stone, and of course, in the direction of the proper treatment. Enough has been done to convince us that further inquiries and observations would

reveal additional and more precise intelligence. Two points have been so clearly ascertained, that our practice, which before was tentative and precarious, is now definitely and scientifically regulated :

1. The appearance of red sand proves the deposition of the urates, to be corrected by the alkalies, &c.

2. The appearance of white deposits, the existence of the phosphates, to be relieved by the acids.

Nor should it be forgotten, that, by the ancient cultivators of medicine, who, confessedly, are unrivalled in the precision and fidelity of their observations, the urine was greatly attended to in framing their conclusions. Why we should so carefully inspect the alvine evacuations in disease, and be totally heedless of the urinary discharge, is neither to be explained nor vindicated. The kidneys are one of the emunctories, through which nature, when oppressed by disordered action, endeavours to relieve herself, and this she does chiefly, by throwing off the more watery parts of the blood, which, in some instances, amount to a very large quantity. Evacuations of this kind, by emptying the blood vessels, though, perhaps, not so effectual, have, unquestionably a tendency to reduce morbid excitement, and, therefore, are entitled to be classed with the other depleting remedies, as venesection, sweating, purging, &c.

These views being correct, it follows, that diuretics are susceptible of a much wider practical application than has hitherto been made. No reason, in fact, exists against their use in all diseases of much

action, provided the milder ones be selected, either as auxiliary in the plan of depletion, or, where other means fail, separately and independently. Whether they are particularly serviceable in the purely pectoral affections, as has been alleged, I cannot positively say. More than one of the active diuretics are much prescribed in these cases, though not exactly with the view of exciting the urinary secretion. Disorders of the chest are, however, so often connected with more or less effusion, that these medicines generally afford relief, and especially when dyspnœa or oppression exists. In the hectic of phthisis they are indisputably serviceable. This practice, which I have long pursued, is defended, as well by my own experience, as that of others, entitled to more confidence. Nor am I less convinced of their utility in hæmoptysis, connected with a morbid condition of the lungs, of frequent repetition and difficult management. Cases of this nature I have often treated by diuretics, and occasionally with success. The febrile inflammatory affections, are also unequivocally benefited by diuretics, and it may be remarked that such cases are sometimes brought to favourable issue by spontaneous diuresis. That some of the complaints of the head, mania included, may be relieved by these remedies, duly timed, my own experience satisfies me. Copious discharges from the kidneys, kept up, without remission, for a succession of days, will as completely reduce the force of the circulation, and calm the violence of excitement, in some of these distemperatures,

as the detraction of blood, or any other means with which I am conversant. Neither must we forget, in speculating on the probable utility of this set of medicines, that many of them operate most powerfully on the absorbents, a system of vessels much more concerned in the production, as well as the removal, of disease, than has generally been suspected. This order of diuretics, however, is chiefly suited to the feebler forms of morbid action, embracing a considerable proportion of the cachectic affections.*

Many of the substances considered diuretic, are very inefficient, and a character common to the whole, is that of extreme uncertainty, which is, in part, owing to the want of discrimination in the application of the medicines, and still more to the circumstance, that there is hardly one of the class exclusively diuretic. They are nearly all possessed of other powers, as diaphoretic or purgative more particularly, and, whenever either of these preponderates, diuresis, so far from being increased, is sensibly restrained.

It may be collected from what I have said, that the following rules are the most important to be attended to, in the use of this description of remedies :

* Lately we have been told particularly of their efficacy in ulcers of the lower extremities, attended with œdematous swellings.† That they should here operate beneficially, is quite conceivable, independently of any direct testimony to this effect.

† Lon. Med. and Phys. Journal, No. 162.

1. Be careful in the selection of the article, that it is properly fitted to the case. Either the mildest or most active may be appropriate, and it sometimes becomes necessary to combine in the same prescription one or more of each species, so as to excite simultaneously the action of the kidneys and absorbents.

2. Never prescribe diuretics, where it can be avoided, to a patient in bed.

3. Let the temperature of the room be low, and all determinations to the surface prevented.

4. As absorption is promoted by the reduction of arterial action, attend to the pulse, and keep it down below the natural standard. This is strikingly applicable to the treatment of dropsical effusions.

5. Where the full effect of the medicine is wished, give diluent drinks freely, though with the limitations already indicated.

SECTION XV.

Particular Diuretics.

POTASSÆ CARBONAS,

ET

POTASSÆ SUB-CARBONAS.

These salts, though varying in chemical composition, are possessed of essentially the same medicinal properties, and directed for similar purposes. The latter is, however, far less pleasant, and, consequently, should be superceded by the former. My remarks, for this reason, will be in reference to the carbonate. As a diuretic, I do not know a great deal of it from my own experience. The trials, however, I have made with it, lead me to think it entitled to some confidence.

Exhibited in the dose of ten or fifteen grains, freely dissolved, and repeated several times a day, it will commonly prove diuretic, though sometimes purgative. Cullen, who is abundantly sceptical on the subject of medicines, speaks not altogether contemptuously of this one. In confirmation of its diuretic powers, it may be stated, that the ashes of a variety of vegetables, which can only operate by their alkaline matter, were much relied on by the older physicians, and are still used by common people in hydropic affections.

The cases of dropsy, in which the carbonate of potash is, perhaps, most useful, are such as are connected with great depravation of the powers of digestion. It is common, under such circumstances, for an acid to be evolved in the stomach, which produces, or is associated with some distressing affections. Cullen was of opinion, that it owes its diuretic properties to a conversion into a salt, by a union with this acid, an hypothesis wanting confirmation.

By combining it with any of the bitter tonics, we sometimes improve its efficacy. Thus administered, it is said to increase the diuretic effect, while, at the same time, it removes the gastric disorder, and invigorates the system generally. To Sir John Pringle we are indebted for this practice, which has since been imitated with sufficient success to warrant my noticing it.

As an antacid, the carbonate of potash is much prescribed, and the following mixture I have found

eminently useful to quiet irritability of the stomach, and check vomitings in our bilious fevers.*†

POTASSÆ ACETAS,

OLIM

SAL DIURETICUS.

Notwithstanding its former reputation, I am not disposed to say much in favour of this article. It has generally disappointed my expectations. Like most of the neutral salts, it has the mixed quality of a mild aperient with that of a diuretic, though I suspect it is more apt to act on the bowels than kidneys. Comparatively, at least, it is much inferior to several of the same class. The dose is from ten to twenty

* R. Potass. Carbonas ʒi.

Gum. arab. ʒij.

Tinct. Theb. gtt. xxx.

Ol. Menth. gtt. x.

Aq. font. ʒv.

M.

The dose is a table spoonful every half hour.

† *Incompatible substances.*—The carbonate of potash is decomposed by the acids and acidulous salts—by borax,—muriate of ammonia—acetate of ammonia—alum—sulphate of magnesia—lime water—nitrate of silver—ammoniated copper—muriate of iron—sub-muriate and oxy-muriate of mercury—super-acetate of lead—tartarised antimony—tartarised iron—the sulphates of zinc, copper, iron, &c.

Paris's Pharmacologia.

grains, dissolved in water, to be repeated four or five times a day. As a purgative much more may be given.*

POTASSÆ TARTRAS,

OLIM

TARTARUM SOLUBILE.

This salt is still retained among the diuretics, and there are some of my medical friends who repose much confidence in it. But my own experience has not led me to appreciate it as highly as the super-tartrate. Given in the dose of a drachm, several times a day, it will, now and then, actively promote the urinary discharge, and bring away watery stools. As a diuretic, its powers are, in some instances, increased, by uniting a small portion of the carbonate of potash with it.†

* *Incompatible substances*.—The *acetate of potash* is decomposed by tamarinds, and most subacid fruits—by almost every acid, as well as by every variety of neutral salt, whether alkaline, acid, or metallic.

† *Incompatible substances*.—Magnesia—baryta and lime—sub-acetate and super-acetate of lead, and nitrate of silver, decompose it. All acids and acidulous salts—tamarinds, and other sub-acid vegetables, by neutralizing a proportion of the base, convert it into a super-tartrate.

POTASSÆ SUPER TARTRAS,

OLIM

TARTARUM CRISTALLI.

Cremor tartar is one of the most certain of the diuretics, and has been much employed in dropsy, particularly in ascites and anasarca. It is best fitted to those cases of the disease accompanied with febrile action, though it here, sometimes, operates more effectually when combined with jalap, or some other active purgative.

It has been strenuously recommended by several highly respectable practitioners, among whom are Home and Ferriar. By experiments, they were led to consider its anti-hydropic power, to use the phrase of one of these writers, as quite equal to the digitalis, and, in many respects, to be preferable to that, in some degree, hazardous medicine. My intention is not to make any comparison between the two articles, nor do I see how it could well be done. They are possessed of very different properties, and seem not all applicable to the same description of cases. Certain it is, however, that the cremor tartar, judiciously administered, will often disperse dropsical swellings very speedily. When it does so, I have observed, that it is by a combined operation on the kidneys and

bowels, producing free discharges of urine, and copious watery stools. This fact I mention more particularly, because there are two modes of exhibiting the article, in which its effects are different. Dissolved in a large quantity of water, it acts merely as a diuretic : whereas, the same dose, given as an electuary, or in a small portion of water, either alone or in combination with some other purgative, operates as a hydragogue. The latter mode, from what I have said, is, therefore, to be preferred, where we wish to evacuate large accumulations of fluid, and it will be here proper also to enjoin on the patient an abstinence from drink. This should not be forgotten in practice. The dose of the cremor tartar alone, as a diuretic, is about a drachm, to be repeated every three or four hours. Given as a purge, which it sometimes is, the quantity is much larger.*†

* Combined with boracic acid, cremor tartar is rendered more soluble, and with Seltzer water makes a very pleasant drink. Whether its diuretic powers are in any degree affected in this state, I am unable to say. The salt thus formed is called, in the *Codex Medicamentarius* of Paris, *Tartarus acidulus potassæ solubilis, admixto acido boracico*, a title too long for common use. The formula is as follows : "Let thirty parts of boracic acid, and twenty parts of distilled water, be heated together in a silver dish. As soon as this has been effected, add in divided portions one hundred and twenty parts of super-tartrate of potash, taking care to shake the mixture continually : the whole will soon liquefy, and by continuing the heat, a pulverulent mass results."

† *Incompatible substances*.—Alkalies and alkaline earths—the mineral acids, &c.

POTASSÆ NITRAS.

In the consideration of diaphoretics, this article was noticed. It is one of very peculiar powers, and may be viewed in various relations. To whatever purpose applied, it seems to me to operate mainly by the direct reduction of action, and especially of the circulatory system. Its effects, however, are much modified by the dose. Exorbitantly taken, it proves decidedly stimulant, inducing intense inflammation of the stomach, with violent spasms, as I have seen in several instances.

It has been long prescribed, and is, unquestionably, one of our best remedies in febrile dropsy. It appears, however, to do as much good by subduing the febrile movement, as by the direct promotion of the urinary discharge. Dropsy, in its first stages especially, is often connected with a strong pulse, and some degree of excitement. Cases of this description are only to be cured by first reducing the force of the circulation, and, as one of the means of attaining this end, nitre is eminently useful. The average quantity of the medicine directed, is a drachm or two a day, and a common mode of giving it is in powders. Its efficacy is improved by a small addition of emetic tartar, and, also, in some cases, by calomel.

Wishing, however, its diuretic effect chiefly, it is best to exhibit it in free dilution. An ounce dissolv-

ed in two or three pints of water, or cider, which latter vehicle is admissible in the weaker forms of dropsy, may be taken with less inconvenience to the stomach, than a drachm in the usual way—and its operation on the kidneys is secured in a tenfold degree.*

SPIRITUS ÆTHERIS NITROSI,

OLIM

SPIRITUS NITRI DULCIS.

This medicine, which consists of a portion of nitric ether and nitric acid, combined with alcohol, has been held in great esteem, as answering a variety of indications. As a diuretic, it sometimes proves active, when largely given, and is peculiarly valuable in the cases of children. We have scarcely any medicine, which, in their complaints, can be substituted in its place, and it may be prescribed, even in the earliest periods of life. Besides dropsy, to which children, in certain parts of our country, are very subject, the spirit of nitre is an important remedy in disorders

* *Incompatible substances.*—Alum—sulphate of magnesia—sulphuric acid—the sulphates of zinc, copper, and iron; and, according to the usual laws of affinity, it should also be decomposed by sulphate of soda, which, however, does not occur, except at the temperature of 32°; and then partially.

of the urinary passages, and particularly in some instances of partial or complete suppressions of urine.

We are generally too sparing in the use of this medicine. As a diuretic, the dose for adults should be from a drachm to half an ounce. It is one of those articles which has also a decided tendency to excite perspiration, and, in a reduced quantity, it is much more apt to be directed to the surface.*†

APIUM PETROSELINUM.

Every part of this plant, the common parsley of our gardens, is actively diuretic, though I have usually prescribed a strong infusion of the roots. The seeds probably answer as well. Having become a domestic remedy, parsley has been too much overlooked in regular practice. I scarcely know a diuretic more valuable in certain cases.

In dropsy, it has, undoubtedly, done good, having, within my own knowledge, cured ascites, where tapping had been twice used. But, beneficial as it may be here, I suspect it is still better adapted to the ordinary suppressions of urine. In strangury from blis-

* *Incompatible substances.*—With a solution of green sulphate of iron, it strikes a deep olive colour, owing probably to its holding a portion of nitrous gas in solution, and with the tincture of guaiacum, it produces a green, or blue coagulum. By age and exposure to the air it is gradually decomposed, and gives rise to the reproduction of nitrous acid.

† Vid. Diaphoretics.

ters, it is one of our best remedies, and I think it scarcely less serviceable in similar affections from other causes. The micturition, so frequently an attendant on nephritis, I have sometimes relieved by its use. This medicine is recommended particularly by the circumstance of its being retained, nearly under all circumstances, and which is the more important, as the stomach is generally very irritable in such states of the urinary organs. To increase the effect, it is customary to unite with parsley, the seeds of the water-melon. Whether any advantage is gained by the addition, I am unprepared to aver or deny.

LEONTODON TARAXACUM.

Dandelion is a plant common to the United States and Europe. It has some valuable medicinal qualities, and, among the rest, that of promoting the urinary discharge. But I do not know whether this effect is so conspicuously manifested, as to entitle it to a place with the diuretics. The fact is, that it has no very sensible operation.

Dropsy, associated with visceral obstruction, is the only case in which I have prescribed it as a diuretic. The best reputation of the article is as a deobstruent. By Zimmerman, Bergius, and other practitioners of the continent of Europe, it is highly extolled in this view, and more recently by Pemberton, in his work on the diseases of the viscera.

In obstructed states of the liver, it does most good. By the last named writer, however, we are told, that he has seen great advantage result from it in chronic inflammation, and incipient scirrhus of that viscus, as well as in chronic derangement of the stomach. Of its utility in the latter case, I am fully persuaded. The late Dr. Rush had much confidence in the deobstruent powers of this article, and often prescribed it in hepatic affections. In evidence of its efficacy, he was in the practice of relating the fact, which he learnt from the butchers of this city, that *liver grown* cattle are speedily relieved by grazing in fields abounding in this vegetable. But perhaps this effect ought rather to be ascribed to the change of diet and habits of the animal, since we are taught that the virtues of the plant are chiefly in the root.

Dandelion may be given in the form of extract, or decoction—the latter made by boiling an ounce of the root, sliced, in a pint of water, till the quantity is reduced one half, adding to the strained liquor a drachm of the vitriolated or cremor tartar. The dose of this is an ounce or more, several times a day—and of the extract, which is an officinal preparation, from a scruple to a drachm, repeated in the same way.

As a sallad, the fresh leaves of the dandelion are used, and, when boiled, as greens. The root, well roasted, makes a very tolerable substitute for coffee.

DIGITALIS PURPUREA.

Besides the mild and stimulating diuretics, we have articles, possessed of the power of increasing the urinary discharge, of a somewhat peculiar nature, which may, perhaps, with propriety, be interposed between these two sections of this class of remedies. Of these, by far the most prominent and interesting article, is the *digitalis*, or *fox glove*.

This plant is not a native of the United States, though it is cultivated among us, and succeeds so well, that it may be considered as *naturalized*. Of the several species of fox glove, the one selected for medicinal use, is the *digitalis purpurea*. Every portion of the plant possesses its peculiar powers, but the leaves are preferred.

Considerable attention is required, in the selection and preparation of the medicine. The leaves should be gathered when the flowers are just beginning to develop themselves, and the largest and deepest coloured are the best. They are to be carefully dried in a warm room, through which a current of air passes, and, when crisp, to be reduced to powder, and kept in bottles closely corked, and not exposed to the light. These are the directions of a writer, who has devoted much attention to the subject. It is a more common practice, however, to preserve the leaves entire, and,

from what I have heard, the virtues are in this mode best retained.

The effects of digitalis on the system are so various, that there is no little difficulty in determining its precise mode of operation. In a full dose, it produces exhaustion of power, marked by great and sudden reduction of vigour in the circulation, the pulse being diminished, both in frequency and force, falling, sometimes, from seventy-five or eighty to thirty or forty beats in a minute, and is rendered exceedingly small and tremulous. This is accompanied with sickness, anxiety, vertigo, dimness of vision, and, in a very large dose, with vomiting, syncope, coldness of the extremities, coma, convulsions, and, ultimately, by death. But this train of phenomena, is not uniform: even from the same dose, we observe considerable diversity in different individuals. Thus the pulse is sometimes slower and depressed, without being diminished in fulness—while, at other times, it becomes broken and irregular, imparting a sort of jerking, or convulsive stroke. Nor does sickness, or other gastric affections, always attend even its extreme, much less its usual, operation. In some cases, when administered in the ordinary quantity, no effect whatever is evinced for a considerable length of time, and then, suddenly, and very unexpectedly, the whole of its powers are disclosed, to such an extent, indeed, as occasionally to excite alarm for the safety of the patient. Examples of these extraordinary effects are not of very frequent occurrence, though they are suf-

ficiently so, to create some degree of circumspection in the use of the article, when we find its operation protracted.

I have had several opportunities of remarking, especially in dropsical effusions, that, though given for a succession of days, in an ample quantity, it was entirely passive, neither influencing, perceptibly, the arterial or absorbent vessels, nor disturbing any of the functions of the animal economy—when, almost instantly, depression of the pulse, a loss of general power, and a profuse discharge by the urinary passages took place. Thus induced, its effects will continue for several days without the slightest abatement, though the medicine be omitted, being analagous, in this respect, to mercury.

Another singularity incident to digitalis, originally noticed in the Edinburgh Medical and Surgical Journal, is worthy of attention. I allude to its action being, in some instances, regulated by the different positions of the patient's body. In the case in which this striking peculiarity first attracted observation, the pulse was much increased in frequency when the patient stood up, being, in this posture, upwards of a hundred: on sitting down, it fell to seventy-five, and, when lying on his back, to forty strokes in a minute. The experiment was repeated again and again, with the same result. Cases of a similar nature, though not in the same degree, have since been recorded by Hamilton, Beddoes, and other writers of respectability, so as to leave no doubt of the occasional existence of

the fact. These anomalies, or exceptions to its ordinary operation, are curious in themselves, and eminently interesting in a practical point of view.

It has been a matter of considerable discussion, ever since digitalis claimed attention, whether it produces its more regular effects by a sedative or stimulant operation. I do not mean to entangle myself in this idle dispute. Conformably to the definition which I have already delivered of these terms, I must place it among the former articles. It is, nevertheless, insisted, and, from actual experiments too, that its primary operation is, to increase the number, and in some instances, perhaps, the force of the pulsations. This, however, even admitting it to be true, is a mere transient effect, which passes away in a very short time, leaving the system in a state which can only be referred to the influence of a sedative. In the experiments to which I have alluded, the effects of the article on the pulse were alone observed, without the slightest notice being taken of its action on other parts of the system. This is a defect incident to almost all the investigations I have met with, of the articles of the *materia medica*. The arterial is only one of many systems of the body, and is so insulated, in its relations to certain medicines, that very strong impressions may be made upon it, without at all extending to the other portions of the animal machine. The converse is equally true. There are many substances which act intensely on particular parts of the system, without affecting, in the slightest degree, the

blood vessels. The state of the pulse, therefore, can never be trusted alone, as affording a safe criterion by which we are to determine the properties, and *modus operandi* of medicines. Looking, however, at the general effects of the article, as already detailed, we can have little hesitation, I think, as to the nature and properties of *digitalis*. Connected by botanical affinity with the *nicotiana*, the *hyosciamus*, the *cicuta*, the *solana*, and other narcotic sedatives, it has, with some modification, all the distinctive features of its congenera. Like these, it lessens the mobility, or excitability, and, in this way, reduces, after a short interval, the actions of the system at large. Who would be so absurd as to exhibit *digitalis* to arouse or stimulate the actions of the system?

The application of this medicine to the cure of diseases is no easy undertaking. Its fortune has been various in the medical world. At one time it was extolled as the most valuable of remedies, in a wide circle of cases, and, at another, proscribed and rejected as inert and useless. This fluctuation and contrariety of opinion extends to the present moment—and, while one set of practitioners consider it as indispensable in the management of certain diseases, there are others, of equal respectability, who, in contempt of its properties, would almost expunge it from the *materia medica*. These opposite views of the same article are, indeed, very extraordinary, and can only be accounted for by supposing, that the plant, owing to negligence in the curing, has not always possessed

equal powers—to the want of accurate observation of its effects, or to its having been given in diseases, or forms of the same disease, not at all suited to its use.

Though known for several centuries, digitalis has not been very long introduced generally into regular practice. In the year 1775, Withering was induced to make a trial of it in dropsy, in consequence of finding it mentioned in a popular prescription for the disease: he had the most ample opportunities of experimenting with it in every species of hydropic effusion, and, so highly did he estimate its diuretic powers, that he declares, “so far as the removal of the water will contribute to cure the patients, so much may be expected from this medicine.” No sooner was the fact known, of its utility in dropsy, than the periodical journals were filled with communications from the most eminent men, of its further success in their hands—and, in the list of those who bore testimony in its favour, are the distinguished names of Darwin, Baker, and Percival. The former of these spoke of it with his characteristic enthusiasm, and thought it serviceable in every variety of effusion, whether occurring in the cellular membrane, or in the cavities of the body. But, in the latter part of his life, his confidence in it was impaired, and he came finally to believe it to be best suited to cases produced by intemperance and debauchery. Combining it with bark, he also gave a grain of opium at bed time, and continued this practice, without intermission, for a length of time. No medicine, I sus-

pect, will be found more useful in all the complaints of drunkards, than opium, and hence I presume that the above prescription is an excellent one.

By Ferriar, one of the most able and accomplished medical men of the age, digitalis has also been used extensively in dropsy. But the result of his multiplied trials with it is not so favourable as that of some other practitioners. "Digitalis," says he, "has been given in twenty-nine cases, of which eleven were cured, seven died, two were relieved, and nine remained stationary. But the cremor tartar succeeded in thirty-three cases out of forty-three." It appears, therefore, from this statement, that digitalis is inferior in efficacy, in dropsy, to cremor tartar, an article which has hitherto been considered, by many, as having infinitely less power over the disease. By the equally celebrated Currie, even a still more unfavourable report has been made of the fox glove, in hydropic affections. Considering the digitalis as a sedative, or highly debilitating medicine, he thought it inapplicable to a disease, which he maintained to originate in exhaustion.

Were it not superfluous, it would be easy to cite many other writers, who still farther disparage the powers of this medicine. By a fair comparison, however, it will be found, that the weight of authority decidedly preponderates in support of its efficacy. If, indeed, there be a fact in the practice of physic so deeply rooted in certainty, as not to be disturbed by cavils or disputation, it is the utility of digitalis in

dropsy. In every species of the disease I have employed it, occasionally, with great advantage, and it seems to me to be nearly as well adapted to the one as to the other. It is useful in hydrothorax, in anasarca, and ascites, provided we carefully ascertain that the system is in a proper state for its reception. While there is much activity in the pulse, and a considerable portion of general strength remaining, it will prove insufficient, and, perhaps, mischievous. Cases of this description are to be previously managed by venesection, purging, and other directly depleting or antiphlogistic remedies. In these views, I am fully warranted by Withering himself, whose ample experience entitles his opinion to particular respect. He states, "that in persons of tense fibres, and great natural strength, the medicine seldom succeeded, while, on the contrary, if the pulse were feeble or intermitting, the countenance pale, and the skin cold, it hardly ever failed to do good." By observing this, he was induced to attempt the reduction of his patients to that state which he conceived most favourable to the operation of the medicine, and chiefly recommends squills and cremor tartar, as the best preparatives in the case.

The opinion which I have expressed, that digitalis is serviceable in all the species of dropsy, is not a common one. By many, it is considered to be productive of little advantage in ascites, and to be extremely useful in the accumulations of the chest. My experience teaches me the contrary. Certain I

am, that I have done less good with it in hydrothorax, than in other dropsies, under circumstances equally favourable. Of those who differ from me on this point of practice, Hamilton, the author of a treatise on digitalis, expresses his sentiments with the greatest confidence. "That a collection of water," he says, "in any of the cavities within the chest, must constitute a disease of great danger, by impeding the action of organs essentially necessary to life, cannot be denied: and it is equally obvious, that such a disorder, if not removed, must soon prove fatal. But that this desirable object may be obtained by the proper use of the digitalis, experience, by which alone I presume to be guided, will not allow me to doubt. For, since I have adopted the effective use of this medicine in such cases, I have never seen one, however advanced or desperate, that was not speedily relieved by it: indeed, it has, in such distressing instances, appeared possessed of powers infinitely beyond what could have been hoped from any medicine whatever, and almost approaching to certainty of effect." Most happy would it be for humanity, were one half of this account correct, and it is truly surprising how a writer, otherwise so respectable, should permit his judgment so far to be deceived by his prejudices or enthusiasm, as to make so extravagant and unfounded a statement!

There is a case, however, of dropsical effusion, in which I fully coincide with him as to the great efficacy of digitalis. The more violent attacks of scarlet

fever are often succeeded by anasarcaous swellings of the lower extremities, and, occasionally, of the whole body, proving exceedingly troublesome, and sometimes even dangerous. Being considered as the effect of debility, it has been customary to treat it by tonics or stimulants, and rarely with success. The utility of active purging, under such circumstances, I have already mentioned. But, like other modes of treatment, this will not uniformly succeed, and there are cases connected with a low and enfeebled condition of the system, to which it is scarcely applicable. Exactly where purgatives are precluded, will digitalis be found serviceable.

As might be presumed, this medicine has not been overlooked in the disorders of the urinary organs. By several writers it is well spoken of in nephritis, and I have heard of its being prescribed in painful dysury from other causes. But I am distrustful of its efficacy in these cases. It seems to be one of the diuretics which act directly on the absorbent system, having little or no relation to the kidneys: and to this inference I am led, by observing that it never produces an increased discharge of urine, except in dropsical effusions.

Digitalis is now prescribed in three different forms, in substance, in tincture, and in infusion. The last is made by putting one drachm of the dried leaves into eight ounces of boiling water, to be reduced to seven ounces, to which, when strained, one ounce of any aromatic spirit is to be added. The dose of this,

for an adult, is about a table spoonful three times a day. A grain of the powder is usually given, either alone, or mixed with some aromatic, morning and night. It may also be made into a pill, which is a more convenient and agreeable mode of exhibition. Of the tinctures, there are two, the most approved of which is prepared agreeably to the formula of Darwin, by digesting two ounces of the dried leaves, coarsely powdered, in eight ounces of proof spirit, for some days, and it is called the saturated tincture: that prepared after the directions of the London and Edinburgh Pharmacopœias, contains only an ounce of the leaves. The medium dose of the first is about five or six drops, and of the second, double the quantity.

An opinion is entertained by some practitioners, and, among others, by Withering, that the infusion is particularly adapted to dropsy, or other cases in which the diuretic effect is desirable—and that, in substance, the medicine answers best where its narcotic property is indicated, as in the pulmonary affections. Given in the latter mode, it is also alleged, that it is much more apt to produce its noxious or exorbitant effects, as, not passing off so readily by the kidneys, the repeated doses, under such circumstances, accumulate in the system. Never having witnessed such a result, or heard of any well authenticated cases in support of it, I presume that this is mere conjecture, wholly unwarranted by fact. The dose of *digitalis* requires to be regularly

increased, where we wish to derive full advantage from it. But, in making this increase, we must proceed with caution, from the circumstance already mentioned, that the action of the article is, in some instances, suspended for a time, or does not develope itself—as well as that we are often surprised with inordinate effects, even from a moderate dose, owing to some peculiarity of constitution. Certain signs sometimes occur, admonitory of its undue operation, on the appearance of which, it is instantly to be discontinued—among which is “a membranous tensive pain of the head, sometimes over one eye, with a sort of disturbance of the brain, preceding every other bad symptom, and which, neglected, generally proves the precursor of convulsions and death.”*

The more ordinary effects are extreme nausea, or vomiting, dim and perverted vision, nervous tremors, cold sweats, with an utter prostration of arterial and general strength, the pulse sometimes slow, though as often quick, diminutive, and tremulous, and the whole accompanied by the utmost degree of indescribable wretchedness. To afford relief in a case like this, we are called upon without delay, and the treatment consists of a blister over the stomach, and sinapisms to the extremities, with the freest use of the active stimulants and cordials, carbonate of ammonia, the tincture of cloves, and, above all, strong brandy and water. Great reliance, however, we are told by

* Blackall on Dropsies.

Beddoes, is to be placed on opium, and where, on account of the state of the stomach, it cannot be retained, anodyne enemata may be substituted.*†

NICOTIANA TABACUM.

To what I have said of this article, under the head of emetics, little remains to be added. As a diuretic, it is, in some respects, similar, though undoubtedly inferior, to digitalis. Not many years ago, it was introduced into the treatment of dropsy, by Fowler, and, at the time, as is usual with new medicines, strongly supported by the attestations of some other respectable practitioners. But its reputation has gradually been declining, and, at present, it is rarely employed. Of my own knowledge, I cannot speak relative to its properties in dropsy, having never prescribed it. Being exceedingly unpleasant in its effects, we ought to have very unequivocal evidence in its favour, before we resort to it, in preference to other remedies, of indisputable efficacy. It is proper, however, to mention, that Ferriar employed it, in some instances, with success, though, on the whole, he seems not to attach much importance to it. Nor, as he gave other medi-

* Vid. Narcotics.

† *Incompatible substances*.—The sulphate of iron, and the infusion of yellow Peruvian bark produce precipitates, and its effects are greatly counteracted by the use of brandy and water.

cines at the same time, is his experience decisive.* To the utility of this article in some other affections, the evidence is more pointed. I have elsewhere mentioned Mr. Earle's mode of treating retention of urine by tobacco enemata†—and it seems, in some cases, scarcely less serviceable when given internally. The tincture is the preparation commonly used, of which, the dose is fifteen or twenty drops.

LACTUCA VIROSA.

This is a European plant, known by the English title of *wild lettuce*. It is lactescent, and, as is common with such vegetables, has a narcotic property resident in the milky juice. Besides being powerfully diuretic, it is represented as a laxative, diaphoretic, and expectorant.

It once had a high reputation in dropsy among the German practitioners. Colin, of Vienna, indeed, reports, that, out of twenty-four cases of the disease, he failed to cure only one by it. The old Latin maxim “quod probat nimis, probat nihil,” is applicable to all such statements. The little reputation which it

* R. Oxy mel. Colch.

Oxy mel. Scill.

Tinct. Nicot.

Sp. Ether. Nitros. āā. p. æq. misce. capiat cochleare parvulum ex aqua pauxillo quater in die. Every morning he also gave cremor tartar to purge.

† Vid. Emetics.

now retains, is in protracted dropsy from obstructions of the abdominal viscera, though, perhaps, on the whole, it is best suited to hydrothorax. Lately it has been much commended in the more purely pectoral affections, as asthma, angina pectoris, pertussis, and ordinary chronic coughs. I have no great experience with it myself. It is given in the form of extract, of which the dose is a grain or two, to be gradually increased.*

MELOE VESICATORIUS,

VEL

LYTTA VESICATORIA.

In treating of Epispastics, I gave the history of this insect.

Cantharides, in whatever manner applied to the body, evince a decided affinity to the urinary and genital organs, and are used in many of the diseases of these parts.

They are employed to promote, as well as to restrain, the urinary discharge. It seems, at first, extraordinary, that the same article should be capable of meeting such contra indications. As an attempt

* We have an indigenous species of this plant, the *Lactuca Elongata*, which is substituted for the foreign, by our country practitioners. I have not used it. It is represented as having the same properties, though in a less degree.

towards an explanation, I shall only observe, that it produces dissimilar effects in opposite conditions of the system, and in different quantities. Exhibited in a state of excitement, or at any time, in small doses, it most commonly occasions strangury, while in a reverse state of the system, and in large doses, it as constantly proves diuretic. Thus, in the weaker forms of dropsy, such doses will often produce the most copious evacuations of urine. Never, indeed, have I witnessed, on some occasions, more powerful effects from any remedy. The fact which I have stated, is corroborated by several respectable authorities. But I must not conceal, that, by some of equal weight, very different representations have been made, of the properties of the article. Cullen, among others, seems to distrust altogether its diuretic powers, and to consider its operation as confined to the neck of the bladder. But he is surely incorrect in this view.

As before mentioned, it is prescribed in some of the cases of incontinence of urine. It has been given with success in this affection, dependant on general paralysis, as well as in that proceeding from over distention of the bladder: and, conversely, in ischury, having its origin in similar circumstances. It has, also, and especially within a few years, been strongly recommended in gleet and leucorrhœa.* But, after a pretty fair trial, I am not warranted to say much in favour of the remedy. Yet it has the confidence of

* Robertson on Cantharides.

several of the physicians of this city, and particularly of my friend Dr. Dewees, in the latter of these complaints, whose reports are always to be respected. Nor have I seen any advantage from it in amenorrhœa. Nearly the same opinion do I entertain of its powers, in seminal weakness and impotency. The reputation which it, in common with some other articles, has acquired in these affections, may, in part, be ascribed to their fictitious existence. Each proceeds, in a plurality of instances, mainly from a state of mental infirmity. No case of real seminal weakness has come under my observation. What is usually taken for it, is a glairy discharge from the urethra, and, perhaps, the prostate gland, brought on by a vile habit, too odious to name. An appearance of this sort, however slight, is always productive of great alarm, heightened by the remorse of conscious guilt. The ordinary cases of alleged impotency, are still more purely mental, resulting simply from a distrust of the powers of virility. An over anxiety for success in this respect often leads to disappointment, and, once happening, the inability becomes confirmed. In the management of such cases, confidence is to be inspired, by a tone of certainty as to the cure, and, then, it is of little consequence whether *cantharides* or *bread pills* be employed. It is here, that a physician is clearly justifiable in practising a "pious fraud." But his duty does not end with the cure in the former instance. He is called upon to discourage a recurrence to so criminal a practice, by presenting,

in the strongest manner, the penal consequences of a renewed indulgence. Of the powers of this article in diabetes, I have no knowledge.

Cantharides may be directed in substance or tincture. The dose of the former to commence, is about a grain, made into a pill, and of the latter, ten or fifteen drops, except in reduced or phlegmatic states of the system, where it may be much more liberally prescribed.*

TEREBINTHINA VENETA:

This is an exudation from a tree, the *pinus laryx*. It comes to us a thick tenacious mass, of a pale yellow colour, having a pungent taste, and a very peculiar odour. By distillation it affords a large portion of essential oil, the *oleum terebinthinæ*, which is highly volatile and inflammable. The residuum constitutes the *resina alba et flava*, of the shops.

Of these preparations, the first two are chiefly prescribed internally, and the oil is preferred. It is a very pervading stimulant, directed, in some degree, to the urinary organs. As a diuretic, however, it does not display much activity in dropsy, or, at least, my trials with it, in the atonic shapes of this complaint, have not been successful. Much more may be done with it in some of the nephritic affections—

* Vid. Epispastics—Incitants.

and I have, undoubtedly, seen it useful in the strangury from blisters, and in gonorrhœa, gleet, and leucorrhœa. The dose of the concrete turpentine, is four or five grains, and of the oil, ten or fifteen drops, to be repeated once or twice a day. Exhibited much more largely, its diuretic effect is defeated by purging. The resin is hardly ever used, except in the composition of unguents or plasters.*

BALSAMUM COPAIVÆ.

This balsam is exuded from the *copaifera officinalis*, a tree which grows in the Brazils and the West Indies. Though undoubtedly operating actively on the urinary passages, it has never claimed much attention merely as diuretic. Yet, in some cases of nephritis, it is admitted to be highly serviceable, and has not been less beneficially employed in leucorrhœa and gleet. My conviction is, that it is still more adapted to the early stages of gonorrhœa. Ever since I entered on the exercise of my profession, I have trusted to the copaiva, almost exclusively, in the management of this disease, and my confidence in its powers has increased, and is fully confirmed. This is no new practice. The medicine was long ago em-

* Vid. Enemata—Antilithics—Anthelmintics—Rubefacients—Incitants.

ployed in gonorrhœa—in the final stages, however, when the inflammatory symptoms had subsided, and the doses were small and inefficient. Experience has taught me to pursue a different course. Commencing with it on the very accession of the disease, I am regardless of all the appearances of inflammation, such as ardor urinæ, chordee, &c. No remedy, indeed, is better calculated to relieve these very symptoms, than the copaiva itself. In the treatment of gonorrhœa, one caution, at least, should always be enjoined on patients who are desirous of a speedy cure. It is an entire abstinence from every heating article of food or drink, and a state of complete repose. Without low living and rest, this, and all other plans of managing the disease, are counteracted, and rendered comparatively of little use.

Two circumstances frequently interfere with the exhibition of the copaiva, and detract from its utility. It sometimes purges, and, when it does, its efficacy is lost, or greatly diminished. We should here combine laudanum with it, which commonly checks this injurious tendency. Where it does not, it must be discontinued till the bowels recover their tone. To the stomach of some persons, the copaiva is so exceedingly offensive, that it cannot be retained. As it is hardly possible to disguise the taste of the article, it is sometimes very difficult to overcome this prejudice. In my various endeavours to effect this purpose, I have succeeded best by one of the annexed

prescriptions.*† It may, however, be taken dropped on milk or sweetened water, or wine.‡

On the use of the copaiva, I am thus precise in my instructions, because I really conceive, that I am suggesting a very important practical improvement, on which information, perhaps, cannot elsewhere be procured. No complaint, of so slight a nature, is more troublesome to the patient, or more vexatious to the practitioner, than gonorrhœa. Contrasted with the ordinary mode of treating it by injections, the plan which I propose has several advantages. It is more convenient to the patient. It produces no swelled testicle. It occasions no strictures. It leaves no gleet. It is more prompt and certain in the cure.

In what manner the copaiva operates in this case, I am not prepared to say. It does, indeed, seem, in some degree, an anomaly, that so heating and active

* R. Bals. copaiv. Sp. nitr. dulc. āā ʒss. Sp. lavend. comp. Tinct. theb. Pulv. gum. arab. āā ʒi. Aq. font. ʒiii. m.

R. Bals. copaiv. Sp. nitr. dulc. āā ʒss. Album ovi, Sacch. alb. ʒi. ft. mist.—adde, Tinct. theb. ʒi. Aq. font. ʒiii. m. Of these mixtures, the dose is a table spoonful, three times a day.

† I have lately learnt from Mr. Brown, a most intelligent apothecary of this city, a much more convenient mode of exhibiting this medicine, than any hitherto proposed. The copaiva is poured on half a wine glass full of water, and immediately afterwards are slowly added, in the same way, a few drops of the common bitter tincture. By this, the copaiva is collected in a small globule, readily swallowed, and its taste, so nauseous to most people, is entirely lost in the bitterness of the vehicle. Given in this mode, it always rests well on the stomach.

‡ I have also recently heard that a few drops of any of the essential oils, and particularly the oil of cinnamon, diminishes very much its nauseous taste.

a stimulant, should be salutary under such circumstances. Nothing, however, is more absurd, or leads to grosser fallacies, than speculations on the precise properties, or *modus operandi*, of medicines. Could any one suppose that turpentine, the most acrid, perhaps, of all the irritants, would allay the heat, soothe the pain, and arrest or subdue the inflammation of a burn?

The copaiva is distinguished, in a remarkable degree, by a specific relation to the genital and urinary organs, as well as to the whole of the neighbouring parts. This is evinced, independently of the facts already mentioned, by the great relief it affords in strangury from blisters, and in painful hæmorrhoidal tumours.

Notwithstanding, however, what I have said of the powers of copaiva in gonorrhœa, it does not always succeed in the disease. No medicine, perhaps, is more apt to be adulterated, or of an inferior quality. Where this happens, we shall uniformly be disappointed.*†‡

* It is commonly adulterated with mastich and common oil. We are told by M. Bucholz, that if it does not dissolve in a mixture of four parts of pure alcohol, and one of rectified ether, we may infer its adulteration. When adulterated with *rape oil*, which it is also frequently, if dropped into water, the drops do not retain a spherical form, as they invariably do in a pure state. *Paris's Pharmacologia*.

† It affords me pleasure to find that Dr. Armstrong fully concurs with me as to the use of this article in the early stages of gonorrhœa. By comparing the dates of the first edition of this work, and of his publication, it will be found that I did not derive the practice from him. Besides which, it is well known that I taught it many years before.

‡ Vid. Expectorants.

SCILLA MARITIMA.

The squill is, indisputably, the most certain, active, and useful diuretic which we possess. It is employed in every form of dropsy with success. Though, in ascites and anasarca, it is useful, were I to determine from my own experience, I should say, without hesitation, that it is still better adapted to hydrothorax. In our public institutions, where the patients have, for the most part, those habits which produce effusions in the chest, I have had the amplest opportunities of making comparative experiments with this and other medicines, and the result is altogether in favour of the squill. My mode of using it in hydrothorax, as well as in the other forms of dropsy, is, to combine it with calomel, in the proportion of two grains of the former, to one of the latter, to be given morning and night, or oftener if circumstances should urge its use. Cullen disapproved of this combination, supposing it would produce purging, which he thought interfered with the diuretic powers of the medicine. Expecting it to be determined more directly to the kidneys, he prescribed it with the neutral salts. Being entirely hypothetical, his opinion is entitled to little confidence or respect. When the calomel purges unduly, which it will sometimes do, we may restrain it, by adding a little opium. In the use of mercury, the mouth becom-

ing affected is an auspicious circumstance. I have observed, especially in hydrothorax, that the distressing symptoms commonly subside on the appearance of ptyalism, which is not altogether owing to the mercurial action, since mercury alone will not so often produce the same effect.

It was once a question much debated, whether the powers of the squill are increased or diminished, by permitting it to induce vomiting, or other sensible effects on the alimentary canal. By Home, then Professor of Materia Medica at Edinburgh, the affirmative side was assumed in this discussion. In dropsy, he gave of the squill and nitre, each, ten grains daily, so as to excite vomiting, and at night supported the patient by means of cordials. Cullen, a cotemporary in the same school, and between whom and his colleague a great rivalry existed, loudly condemned this practice. He, on the contrary, maintained, that the diuretic effect of the medicine is greatly abated, whenever it operates either as an emetic or purgative, which he ascribed "to its being prevented entering the blood vessels, and thereby reaching the kidneys." By "a certain writer," says he, in another place, alluding to Home, "it is alleged, that the diuretic effect of the squill is not to be expected, unless it shows some operation on the stomach. This, perhaps, may be founded. But I understand it in no other way, than that some operation on the stomach is a test, and a necessary test, of the squill's being in an active state, in the same manner as we are only certain of

the activity of the mercurial preparations, when they have shown some effects on the mouth. I have often observed, that when the squill operates strongly on the stomach or intestines, that the diuretic effects were less ready to happen."

Like most other cases, truth lies, in this controversy, between the extremes, and, in order to reach it, we must pursue a middle course, avoiding Scylla as well as Charybdis. The point in dispute is not whether emetics or purgatives are useful in dropsy, but whether the peculiar powers of the squill, in these cases, are best attained by pushing it to this extent. From my own experience, which has been ample, I should say, without hesitation, that the just medium, in its employment, is a very slight and moderate degree of the nauseating effect. Nevertheless, this is not absolutely necessary to its successful operation, as, in some cases, I have commanded its full effects, without having observed the slightest distress of stomach.*

COLCHICUM AUTUMNALE.

The meadow saffron, though not a native, is cultivated in our gardens. It has a bulbous root, long considered as the only medicinal part of the plant. In the recent state, this is exceedingly acrid, and, on

* Vid. Emetics—Expectorants.

being cut into pieces, emits particles, which irritate the eyes and fauces, and even paralyze the fingers, for a time, with which it is held. Taken into the stomach, in so small a quantity as a grain, it excites a sense of heat and thirst, with strangury, tormina, and tenesmus. Notwithstanding, however, these violent effects, Baron Stoerk, with his characteristic intrepidity, resolved to make an application of the article to the cure of disease. Having first tried it on himself, he prescribed it freely, "in desperate hydroptic, and other serous disorders," in which, as exhibited by him, it was always found to act "without disturbance, as a most potent diuretic, after the common medicines employed with that intention had failed." As an oxymel, or syrup, he ascertained that its harshness is mitigated, and his formula, which has since been generally adopted, is contained in the dispensatories. Of this preparation, a drachm may be given two or three times a day, gradually augmented to a much larger quantity.

Colchicum, till lately, seems not to have had, in any great degree, the confidence of the practitioners of Great Britain or this country. But, on the continent of Europe, particularly in Germany and France, it has, and continues to be, in high repute, in drop-sical effusions—in some of the complaints of the chest, as an expectorant—in the treatment of intermittent fevers, &c.

Within the last few years, very general attention has been directed to this article, in consequence of

its being supposed to constitute the basis of the Eau Medicinale, a nostrum, that has acquired immense celebrity, in the cure of gout and rheumatism.* The

* The Eau Medicinale was invented nearly half a century ago, by M. Husson, a military officer in the service of France. It soon acquired great reputation on the continent of Europe, as a remedy in the arthritic affections, which it has ever since maintained, with little or no diminution. But it is only within the last eight or ten years, that it has attracted much attention in England or this country. As imported, it is in small bottles, which hold about two drachms, and it is a fluid of the colour of ale, with a nauseous, bitter taste, and strongly scented with the Spanish wine, used as the menstruum. The whole contents of a bottle is recommended as a dose, though I have found it safer to give half this quantity. It is usually taken on going to bed, and its operation may be greatly promoted by warm beverages. After a few hours, the patient complains of nausea, which is sometimes followed by active vomiting, and copious evacuations of dark bilious matter by stool. To these succeed a moderate diaphoresis, and, ultimately, very powerful diuretic effects, which will sometimes continue for a succession of days.

During the operation of the medicine, the pain and swelling of the joints so rapidly subside, that it is not uncommon for the person to be at perfect ease in the morning, and to recover, in a great degree, the use of his limbs. If the paroxysm should return, or not entirely go off, the dose is to be repeated.

As might be imagined, this medicine is very differently estimated by practitioners. While, by some, it is most highly extolled in gout, there are others who condemn it as both useless and pernicious. Even by some of those who admit its immediate utility, it is dreaded lest it may eventually produce injury to the constitution, like the Portland powder, &c.

From my own experience, which, however, is not very extensive with it, I should be warranted in saying much in favour of the Eau Medicinale. I have seen it tried in five or six cases of gout of different forms, and always with signal advantage. In paroxysms of podagra, the effects which I have witnessed, were nearly such as I have just described, with this difference, however, that long before nausea or purging commenced, there were, in every instance, a marked mitigation of pain, and

preparation now in use, is a saturated vinous tincture. Whether this tincture is substantially the Eau Medicinale, I shall not undertake to determine. By those, however, whose experience with the two articles is more extensive than mine, their identity has been confidently asserted. To this point, at least, we have some very strong evidence, that colchicum has done a great deal of good in analogous affections, and that, in all its leading and more prominent effects, it very closely resembles the French medicine. What, too, lends further support to the same conclusion, is, that it appears from the older writers on the *materia medica*, that the hermodactyle, a species of colchicum,* was much resorted to, in these diseases, by

a correspondent degree of composure, resembling, very nearly, the state induced by an anodyne. Twice I have given it in misplaced gout, attacking the stomach with great violence, and each time promptly afforded relief. Whether the repeated use of this medicine has any tendency to impair the tone of the system, and thereby aggravate the mischief which it is designed to remove, I have not sufficient experience to decide. The only fact which has come within my own knowledge, is against any such apprehension. There is a gentleman of this city, who, during the greater part of a long life, was the victim of gout, in its several forms, and, by recurring to small doses of Eau Medicinale, whenever admonished by any of the indications of an attack, has very successfully warded off a paroxysm for several years, and is now in a sound and vigorous state of health. Nevertheless, I do not recommend an imitation of this practice. My experience with the medicine is much too narrow, to speak in a tone of confidence, with regard to its applications.

The Eau Medicinale has also been supposed to consist of the nicotiana, the gratiola, the veratrum, the elaterium, &c.

* Colchicum Illyricum.

the earlier physicians, who considered it so signally efficacious, as to bestow on it the title of "*anima articulorum*."* Besides which, it is ascertained that the hermodactyle enters largely into many of the most celebrated of the specifics for gout, such as the *dia hermodactylum*—the *pulvis arthriticus Turneri*—the *Vienna gout decoction*—the *mixture of Wedelius*, &c. The effects, moreover, of the first of these nostrums, as described by Alexander of Tralles, are precisely similar to those usually produced by the *Eau Medicinale*, and, according to him, those who take it are *at once relieved of gout*.

Not much is said in the new reports relative to the colchicum, of its diuretic powers, or of its application, in this view, to the treatment of disease. But we have the most ample testimony to its efficacy in atonic gout, and in ordinary, as well as syphilitic, rheumatism. Treating of its effects in these cases, a late writer thus enthusiastically expresses himself: "I cannot contemplate an extensive use of it in many painful diseases, besides those already noticed, without entertaining the hope and belief that we have at length found the happy desideratum, a powerful, yet mild medicine, capable of substituting calmness, tranquillity, and balmy sleep, in the place of pain, weariness, and restless nights—a renovation of long lost limbs, and comparatively robust health, in lieu of feebleness and emaciation—in a word, affording to

* Quincey's Dispensatory.

the poor, as well as to the rich, the cherishing prospect of prolonged life, and, during its continuance, an oblivion of many of its distressing pains.”*

By other authorities of respectability, we are assured it has, in so eminent a degree, the power of subduing the pulse and overcoming inflammation, that it may be advantageously used in place of the lancet in the purer fevers, as well as in the phlegmasiæ. Of the correctness of this statement, I am exceedingly incredulous. There is no substitute for venesection in such cases, and these estimates of the qualities of the medicine, partake most strikingly of the character of similar exaggerations, some years ago, relative to digitalis. This extravagance of praise is, however, restricted pretty much to a new preparation of colchicum, the vinous tincture of the seeds, which are said to possess in a higher degree the medicinal virtues of the root, without any of its baneful qualities. That the statement is partly true, I am inclined to believe, having found it decidedly serviceable in the reduced shapes of rheumatism and gout, and especially, I think, when the kidneys or muscles of the lumbar region are affected.

Doubtless, much of the contrariety of opinion on the subject of colchicum, is to be ascribed to the different states in which it is found in the shops, owing to the season when it is gathered, and the mode of

* Williams on Colchicum.

preservation. On these points, there is no exact concurrence of advice or practice.

What, on the whole, seems to be most important, is to dig up the plant before the second growth commences, and so to preserve it as to prevent this process taking place, in which all its medicinal strength is expended. As regards the seeds, they should be collected at the end of June, carefully dried, and kept in this state.* Two ounces of these in a pint, or, as some writers direct, a quart of sherry wine, and strained through blotting paper, after digesting eight days, is the mode of preparation. As a menstruum, either vinegar, or the aromatic spirit of ammonia, will, however, answer as well. The tincture of the root may be made in the same way, and in similar proportions of the ingredients—the dose of each is a small tea spoonful several times a day.†

POLYGALA SENEGA.

This is a native plant, very abundantly distributed throughout the United States, though flourishing best in Virginia. The root, the only part medicinal, is contorted and tuberculated, as if composed of joints, and by an effort of the imagination has been assimilated to the tail of the serpent, the name of which the

* Colchicum, in this section of the United States, though it flowers, never seeds, and I suspect the bulb is very inferior to the imported.

† Vid. Expectorants.

plant bears. Towards the middle of the last century, the seneka was introduced by Dr. Tennent, of Virginia, as a remedy in numerous diseases, and especially as a specific for the bite of the rattlesnake, a case in which it has long since lost all credit. But, in other respects, its claims to medicinal properties have been fully established. It is, indisputably, among the active and diffusible stimulants, pervading every part of the body, exciting arterial action, and promoting freely the secretory and excretory processes.

As a diuretic, it has been much celebrated. But, though using it very freely, I have never discovered any extraordinary operation from it on the kidneys. Nevertheless, it is undoubtedly serviceable in dropsy, having been employed in all the forms of this disease, and, if the most respectable writers are deserving of credit, with distinguished success. We are informed, by Sir Francis Millman, that he cured six out of thirteen cases of ascites, by this medicine only : by Percival it is highly commended, under the same circumstances, and likewise in hydrothorax : Cullen, too, who seems not to have employed it himself, cites some authorities in its favour. It has, however, lost much of its reputation in dropsy, from its having been, I suspect, too indiscriminately used. No one has pointed out, with sufficient precision, the state of the disease in which it is applicable, or prescribed any principle for its just administration. From what I have observed of its effects, as well as from my theoretical notions respecting its properties, I am inclined

to believe, that it will be found most efficacious in those cases of universal dropsy, which depend on a very enfeebled absorption, and are connected with a general cachectic, or vitiated state of the system. It is only under such circumstances, that my experience teaches me it is beneficial. The seneka, in its diffusive operation, often extends to the lymphatics, exciting these vessels to very invigorated efforts. Its efficacy here may sometimes be promoted, by combining small quantities of calomel with it. This is easily done, by previously reducing it to powder, and forming it into pills : the usual dose of which is about a scruple, to be repeated several times a day. I have, however, exhibited much more of it at a time.*

LOBELIA SYPHILITICA.

This is an indigenous plant. The root, which is the only part used, consists of short white fibres, resembling tobacco in taste, and, if chewed, is apt, at first, to create nausea, and even vomiting. It had some reputation as an Indian remedy, for the cure of syphilis, till it was fairly tried, and found to be useless.† But its diuretic properties are fully confirmed, and it seems not unreasonable to conjecture from this, that its reputation may have arisen in conse-

* Vid. Expectorants and Emmenagogues.

† Pearson on the Effects of various Articles, &c. in the Cure of Lues Venerea.

quence of its proving serviceable in gonorrhœa, which, from all that we can learn, is by far the most prevalent form of the venereal disease among our aboriginal people.

The lobelia is employed, I understand, by some practitioners of the western country, in dropsy, and not without success. It is, undoubtedly, one of those native vegetables, which, on every account, ought to be carefully examined, and its properties accurately determined.

CHIMAPHILA UMBELLATA.

This is one of the plants common to the Old and New World. It is found in several of the districts of Europe, in the south of Asia, and throughout the United States. Nothing appears, however, to have been accurately ascertained as to its medicinal properties, till recently, though we have some reason to believe, that it was long employed as a diaphoretic, by our Indians, in their inflammatory diseases. It is called by them Pippissewa, and is recognised in popular practice, where it is much used for the same purposes, by the title of *rheumatism weed*. As an active diuretic, it is likewise well known to the country people, and is resorted to by them in dropsies, and the affections of the urinary organs generally, being a remedy, moreover, on which they greatly rely to relieve their cattle of strangury. Nor, from recent intelligence, does it

seem, that our northern Indians, at least, are unacquainted with its powers in these respects. In the year 1803, the properties of this plant were, probably for the first time, investigated with any sort of care or precision, by Dr. Mitchell, a graduate of our university, who made it the subject of his inaugural dissertation. But, though he distinctly pointed out its medicinal virtues, as well as many of the diseases to which it is applicable, the plant attracted little or no attention. Not long afterwards, however, some account was given to the public, of the great powers of this article in dropsy, by Dr. Sommerville, of the British forces in Canada,* and, from that time, it seems to have become, among the London practitioners especially, a favourite remedy. The late periodical journals of that country, contain some strong attestations in favour of the article, proceeding from the highest medical authority, such as Farquhar, Satterly, Marcet, &c.

As yet, I apprehend, it has not been much tried in regular practice in the United States. It is gaining ground in this city, and some decisive evidence might be collected in support of the statements from abroad, of its efficacy. But, from what I can learn, it is quite as much prescribed elsewhere as a diaphoretic, and was particularly so in our late winter epidemic, the typhoid pneumonia, or spotted fever.

* London Medico-Chirurgical Transactions, Vol. V.

As a diuretic, the quality which gives it a place most conspicuously in the *materia medica*, it is distinguished by activity and certainty of operation—with this peculiarity, that, while it stimulates the kidneys to an increased effort, it acts on the stomach as a tonic, with so much effect, that it has been prescribed for the cure of intermittent fevers. Whether it be serviceable in correcting the lithic diathesis, an opinion of the late professor Barton, I am not prepared to assert from any new facts. Being, however, somewhat analogous to the *uva ursi*, one of the remedies in that case, it is more than likely that it might be of advantage. That it is useful in *scrofula*, cannot be denied. Its reputation, indeed, is so high, that it has acquired the provincial title of “King’s Cure.” To open *scrofula*, it is best suited, the ulcers being washed with a decoction of it, while the same preparation may be taken internally. By acting on the lymphatic system, the seat of the strumous affections, it probably does good in these cases. Besides, in decoction, it is directed in strong infusion, or in an extract, a pint or more of the former to be taken in the twenty-four hours, and of the latter, during the same period, one or two drachms, made into pills, or dissolved in water. Every part of the plant is reputed to be active.*

* In the following section will be found several articles, which, though arranged under the head of antilithics, are equally diuretics.

SECTION XVI.

Lithontriptica et Antilithica, or Lithontriptics and Antilithics.

By a very natural transition, I pass from diuretics to the consideration of lithontriptics, or, as they have been more recently called, antilithics. These are medicines once supposed to break down or dissolve a stone, but now more generally held to be corrective of the lithic diathesis. Each of the terms appears to me to be appropriate, and ought to be retained. We require a name for the set of articles which exists, or is supposed to exist, as solvents of stone, and not less, some appellative designation of such as prevent, or correct the lithic tendency.

In what consists this diathesis is not distinctly understood. Its connection with gout is obvious, and the latter is seemingly dependent, in a great degree, on a weakened or disordered stomach. Certain habits and peculiar modes of living, the sedentary occupations of the studious, the indulgencies of the voluptuous, or the excesses of the still more intemperate

and debauched, are found alike to be sources of the two diseases. By this analogy, however, we do not add much to our knowledge. The origin of the one, as well as of the other, is shrouded in obscurity—though I am persuaded, that the first link of the series of actions, which cause these two formidable maladies, the scourge of our nature, and, in some degree, the reproach of our art, has its commencement in the stomach. It is now sufficiently established, that in gout there is a peculiar matter developed, proceeding from a vitiated state of the digestive process. Nor, perhaps, is it less true, that similar matter, taken up, and ultimately thrown into the bladder, constitutes the foundation of one species at least of gravel and stone. Numerous reasons exist for this conjecture, and among others the perfect identity of some of the arthritic and urinary concretions. That the deposition in each of these cases, is, sometimes, urate of soda, is well ascertained. The relation between the two diseases, is, moreover, shown by an alternation of symptoms, and by the copious appearance of red sand in the urine, as immediately preliminary to the subsidence of a gouty paroxysm.

But the urates are only one of the calculous products: and whence proceeds the cause of the rest, so diversified in composition, as well as in their outer aspects? It is to be recollected, that no function of the animal economy is more under the controul of the stomach, and its immediate dependencies, than

the secretion of urine, and as the one, so will the other become affected. Digestion, in the fullest sense of the term, being sound, chyle is a homogeneous fluid, however various the materials may be, out of which it is formed. But when this process becomes depraved, the result is very different, and a vast variety of new ingredients is found in the urine, entering into divers combinations. More precise details on this subject will be given at the close of this section.

The requisite, for the most part, under such circumstances, for the formation of stone, is some nucleus, and this is usually supplied by a deposition of mucus, or by drops of extravasated blood, or a gravelly fragment, or, in fine, by any extraneous matter, around which an accretion takes place, with greater or less rapidity. Whatever obstructs the escape of the urine, as an enlargement of the prostate gland, or strictures of the urethra, by permitting depositions from it in the bladder, conduces to the same end. Thus settling, the gritty particles are gradually conglomerated into a petreous mass. The nature of the stone will be determined by the state and composition of the urine at the time, and its subsequent changes, presenting, in some instances, an entire uniformity, and, in others, a basis and strata very differently constituted. As the most common occurrence, the stomach is in a state either of *acidity* or *alkalescence*. When the first prevails, we have the urates, and in the second case, the phosphates. The

urates, however, are by far the largest proportion of calculi, as well as of the sandy deposits.

Chemistry had no sooner made its way into medicine, than it began to exercise its ingenuity in devising theories to explain more precisely the origin of the calculous formations. Even its extraordinary resources have been, in part, baffled by the difficulty of the subject. Chemical analysis, however, has ascertained, pretty accurately, the substances which enter into the composition of calculi, and pointed out the agents, which operate upon them most powerfully *out of the body*. The substances hitherto discovered, are the following :

1. Uric acid,
2. Phosphate of lime,
3. Phosphate of magnesia and ammonia,
4. Oxalate of lime,
5. Muriate of ammonia,
6. Magnesia,
7. Phosphate of iron,
8. Silica,
9. Urea,
10. Cystic oxid,
11. Mucus.*

As previously stated, these elementary matters exist in different combinations, which have been va-

* Two non-descript substances, forming concretions in the bladder, have lately been noticed by Dr. Marcet. The one he calls Xanthic oxide, and the other Fibrinous calculus.

riously arranged. The classification of Wollaston is, perhaps, the best, and, in a practical point of view, deserves a preference. Calculi he divides into four kinds :

1. Uric calculi—composed of uric acid, or chiefly of that substance.

2. Fusible calculi—composed chiefly of phosphate of lime, and phosphate of magnesia and ammonia.

3. Mulberry calculi—composed of oxalate of lime.

4. Bone-earth calculi—composed chiefly of phosphate of lime.

Endeavours have been repeatedly made, to discover solvents for these several productions. The inquiry, for some time neglected, has again been renewed by the French chemists, and, as I have already remarked, not without success. These experiments were instituted, for the purpose of showing the practicability of dissolving stones in the bladder, by injections through the urethra. The result most incontestably proves,

1. That a solution of pure potash or soda, so weak that it may be kept in the mouth, and even swallowed, without pain, soon dissolves calculi composed of uric acid, or of urate of ammonia, provided they be kept plunged in it.

2. The phosphates are quickly dissolved by nitric or muriatic acid, so weak that it may be swallowed without inconvenience, and possessed of no greater acidity than urine itself.

3. Calculi, composed of the oxalate of lime, are

slowly dissolved by nitric acid, or by carbonate of potash or soda, so weak as not to produce any irritation.

It is contended, that these solvents, injected into the bladder, ought to act on the stone, and gradually dissolve it :—nor do I perceive why they should not, though the few attempts which have been made, afford us little encouragement. But, may not this want of success, be owing to their not having been conducted with all the care which the case requires ? To succeed in such experiments, much skill and perseverance is demanded.

The fact of the different species of calculi being so readily soluble out of the body, should also incite us to further, and most assiduous exertions, to detect some agent, which, exhibited in the ordinary way, may produce the same effect in the bladder. Whether we, at present, possess one, is extremely problematical, though cases have sometimes been recorded, where a stone has disappeared under the use of lithontriptics. The older writers abound in statements of this description, and we are not deficient in more recent and authentic evidence. Within my own knowledge, facts to this purport have occurred. Yet, it is not clearly determined, whether this effect is to be imputed to the medicine, or the spontaneous operations of nature. It sometimes, happens, too, that, though the symptoms disappear, the stone remains in the bladder. Two cases of this kind have lately been recorded by sir Everard Home, from the use of the

alkalines, in which, after death, calculi were found of a large size embedded in cysts. It appears, under such circumstances, that they have either the asperities of the surface so worn off, or become so covered by an adventitious coat of mucus or lymph, that they cease to produce irritation. I am rather inclined to suspect, from a review of the whole ground, that certain articles have occasionally displayed this valuable property. The practice, however, under such circumstances, must be very ambiguous and precarious. Of the many difficulties incident to the case, not the least is to determine the composition of the existing stone, in order to select the appropriate solvent. Having no precise mode of doing this, we shall be compelled to practise somewhat empirically—with one and another substance, without any definite rule, or principle, till we discover some one, which may answer the purpose. The opinion I have expressed, of the possibility of dissolving a stone in the bladder by a course of medicine, rests upon two grounds :

1. That, by experiments already referred to, it appears, we possess solvents for almost every species of calculi, out of the body, which might be given in a sufficient quantity to effect the end, with no prejudice to the system.

2. That some of these solvents are found in the urinary bladder without any, or, at least, a material change being wrought in their properties, so that, when coming in contact with the stone, there might be a play of chemical affinities, and a decomposition

of the calculous body. My present view of the subject is perfectly consistent with the doctrine which I formerly delivered, that no substance enters the circulation with a retention of its original powers. It is still manifest, "that the process of assimilation, whether performed by the chylopoietic viscera, or by any part of the absorbent apparatus, completely animalizes all articles subjected to its influence, and, however various in their composition, reduces them to one homogeneous fluid, bland in its nature, and fit for the purpose of nutrition. But, the secretions or excretions being removed beyond the sphere of the vital powers, chemical action takes place, by which those substances, are, in part, or entirely regenerated.*"

Besides, it seems that there is really a direct communication between the stomach and bladder, through which substances are conveyed without undergoing any essential change. The fact of a rapid transmission of certain fluids to the urinary organs, had, long ago, led to a suspicion of such a passage. Every physician was aware, that nitre, or rhubarb, turpentine, or garlic, may be detected in the urine twenty or thirty minutes after being taken into the stomach, a time much too short for it to have reached that destination through the ordinary route of the blood vessels. It was supposed by Darwin, that the transmission takes place, in these cases, in consequence of the

* Vid. the section on the *modus operandi* of medicines.

retrograde action of the absorbents. But this is a very lame and imperfect solution of the problem. Even admitting, that the lymphatics do occasionally perform this inverted office, which, from their valvular structure, is rendered next to impossible, it is the effect of disease. To resort to an irregular and morbid state, to account for the phenomena of a uniform and healthy function, is surely in opposition to all the rules of medical philosophising. Whatever may be the mode of communication, of the fact there cannot now be much doubt. It is known, that, in some cases, where the kidneys were nearly destroyed by the ravages of disease, the bladder was filled, as usual, not with urine, because this is a peculiar fluid, the result of a secretory action of these organs. By tying the ureters in the dog, it has also been found, that the discharge from the bladder, though diminished, is not entirely suspended. These facts I state on the authority of Darwin.

The experiments of Sir Everard Home are still more satisfactory. To determine this point, he placed a ligature round the pylorus of the stomach of a dog, which had been previously evacuated thoroughly, and, afterwards introducing fluids into it, coloured by rhubarb, he detected this substance in thirty minutes in the urine. They were repeated so frequently, and under circumstances apparently of such precision, as to leave little hesitation as to their accuracy.

Experiments recently made in Europe, to which I cannot now refer more particularly, were attended

with similar results. In the bladder the alkalies are found little or not at all changed, and in so short a time as to preclude the idea of their passing through the circulation: I have detected them in the urine, in twenty minutes from their reception in the stomach.

Notwithstanding all I have said, I shall not absolutely insist on the solvent powers of any substance, with which we are at present acquainted. It has always appeared to me, that our knowledge respecting the lithontriptic medicines, is exceedingly imperfect, very vaguely stated for the most part, and mixed with, and disfigured by, a vast deal of credulity and empiricism. Enough, however, is ascertained, in relation to them, to warrant us to persevere in our trials, as well with those which we already have, as with new substances. Even admitting, that we neither have, nor ever shall have, a real lithontriptic, it must still be conceded, that there are now in our possession, and, no doubt, others remain to be discovered, many articles indisputably useful in mitigating the pain, or arresting the growth of calculus, not to mention the nephritic affections, in which such medicines are serviceable.

SECTION XVII.

Particular Lithontriptics, &c.

CARBONIC ACID.

AMONG the substances supposed to possess such properties, the one longest known, is carbonic acid, or fixed air. Its utility, however, in calculous complaints, was not very satisfactorily illustrated, or the mode of its administration pointed out, till the appearance of the work of Dobson on the subject, thirty-five or forty years ago. The remedy soon after attracted general attention, and we find both Saunders and Percival strenuously insisting, to use the language of one of these writers, "for the solubility of the human calculi, while yet in the bladder, by the regular and continued use of fixed air." It was now proved, as had been previously suggested by Hales, that calculi immersed in malt liquor, or in water im-

pregnated with carbonic acid, are, by virtue of this principle, gradually diminished in bulk, till, finally, they undergo a complete solution. These experiments were made by Saunders, Percival, and Falconer.

The next point to be determined, was, whether this fluid taken into the stomach, could be so conveyed, as to enter the bladder unchanged, the practicability of which was also demonstrated. We are informed by Percival, that a patient of his, while under a course of fixed air, which he took daily, in very large quantities, had his urine strongly impregnated with it, as appeared by the precipitation it produced in lime water, by the bubbles it copiously emitted when placed under the receiver of an air pump, and by the solution of several urinary stones immersed in it. This fact, so strong in itself, has since been corroborated by a series of experiments conducted by the celebrated Priestley. It, moreover, appears, on the authority of several respectable writers, that when human calculi are placed in Pyrmont and Spa waters, which contain carbonic acid, they are dissolved, and that the urine of persons drinking these waters has the same effect.

Of the utility of carbonic acid, in cases of stone, I can say little from personal observations. It would, however, be an unjustifiable degree of scepticism, to doubt its occasional efficacy. I do not mean as a solvent, for, in this view, it is altogether questionable.

In some nephritic affections, I have certainly used it with advantage. It may be given in the form of

Seltzer water, an exceedingly pleasant beverage, readily taken in any quantity.

FIXED ALKALIES.

The idea of calculus having its origin in an acid, has led to the very common employment of the alkalies, as solvents or correctives. This is supposed to be a modern practice. Consulting the writers of the commencement of the last century, however, I find the alkalies recommended in these very cases. In Robinson's Treatise on Gout, which appeared in the year 1721, the salt of tartar is expressly suggested, among other things, as a solvent of stone. At a period somewhat later, these medicines are particularly noticed in the works of Hartley, Whytt, Kirkpatrick, De Haen, &c.

With all this weight of recommendation, the alkalies were certainly laid aside, and, for a considerable time, had nearly lost their reputation in such cases. It was not, indeed, till about thirty years ago, that they were revived, and again introduced into the treatment of calculous complaints. Experience has subsequently confirmed, in some measure, their virtues.

The fixed alkalies are prescribed both in the mild and caustic state, according to the object in view. The solution of the stone being intended, the pure alkali is given in the dose of fifteen or twenty drops of the aqua potassæ, morning and evening, increasing

it gradually, as far as the stomach will allow. It is apt, after a short time, to produce gastric distress, which may, in some degree, be obviated, by combining it with mucilage, and, still more, by taking it in soup, or other gelatinous matter. But, under the best management, it cannot be long continued. On this account the vegetable alkali is more commonly directed, in the state of carbonate, as a palliative only, and here it operates by merely correcting the lithic acid, thereby preventing the further increase of the stone.* Thirty or forty grains of it, in some diluent drink, to be repeated several times in the twenty-four hours, is one mode of exhibiting it. But a supersaturation of it with carbonic acid, constituting the *aqua mephitica*, *alkalina*, or the aerated alkaline water, as it is called, prepared by a well known apparatus, is more frequently used, and, perhaps, with greater efficacy. Few remedies, indeed, afford so much relief, at least in the nephritic affections, especially when drunk to the amount of two or three pints in the course of the day. But where it cannot be had, a tolerable substitute is afforded in the common effervescent draught, frequently repeated.†

* No advantage is probably gained by the administration of the caustic alkali with a view to its solvent effects. Long before it reaches the bladder, it meets with fixed air, and is converted into a carbonate, &c.

† *Incompatible substances*.—The carbonate of potash is decomposed by the acids and acidulous salts—by borax,—muriate of ammonia—acetate of ammonia—alum—sulphate of magnesia—lime water—nitrate of silver—ammoniated copper—muriate of iron—sub-muriate and oxy-muriate of mercury—super-acetate of lead—tartarised antimony—tartarised iron—the sulphates of zinc, copper, iron, &c.

Paris's Pharmacologia.

The carbonate of soda is found to be not less advantageous, the pure alkali very rarely, if at all, being used. It is given in solution, in the proportion of a drachm, or more, to a quart of water, of which the whole may be drunk in divided quantities, daily, or it may be prepared exactly as is the carbonate of potash. But a more common, as well as agreeable mode of using it, where it is attainable, is in the shape of *soda water*. In thus prescribing it, we ought to recollect that the popular beverage now vended under this title, contains little or no soda. It is, for the most part, *seltzer water*, or with so slight an alkaline impregnation, as not to affect the taste. By Mr. Brande, who has written with much practical ability on this subject, it is recommended that soda water should be kept in the shops, *single*, *double*, and *treble*. The first to contain one—the second, two—and the third, three drachms of the crystallised sub-carbonate in a pint of water, of which three half pints, more or less, may be consumed daily, according as suits the case. To render it more palatable, a table spoonful of lemon juice may be added to each half pint of the strongest of these preparations.

The mineral alkali is also sometimes prescribed in pills. For this purpose, the salt must be previously exposed to a very gentle heat, till it loses the water of crystallization, and the dry powder thus obtained is worked up with mucilage. Each of the alkalies has, moreover, been much used in the form of soap. It is, of course, the purer soaps, such as are made with

the mild expressed oils, of which an ounce may be taken daily.

AMMONIÆ CARBONAS.

This article has never before been placed in this position in the *materia medica*. But there is no reason why it should not be useful in calculous affections, and we are told by Mr. Brande, that he finds it to be so. The case in which he recommends it, is, where symptoms of indigestion are brought on by the other alkalies, and especially in the depositions of red sand, connected with gout. It may be given in the form of *aqua carbonatis ammoniæ*, in the dose of a drachm or more, or the solid salt made into a julep, or, what he prefers, into pills with extract of camomile or some other bitter, twenty grains of the former, and a drachm of the latter, divided into twenty-four pills, two or three of which are a dose, thrice a day.

An objection, however, seemingly of some force, has been raised against the employment of the alkalies. It is alleged, that the phosphates of lime and magnesia, existing in the urine, are retained in solution, principally by an excess of acid: if, therefore, for the purpose of dissolving a uric acid calculus, or preventing its growth, alkalies be given so as to neutralize this acid, the deposition of these phosphates may be favoured, and a layer of them form on the existing

stone.* Chemically, all this may be true, and no doubt does occasionally happen. Calculous productions, however, are not limited exclusively to this particular composition, and the experience of every practical man has shown, that this set of articles is very often beneficial, and must not too hastily be laid aside. To the cases in which the uric acid predominates, the alkalies, we are told, are only appropriate. This is obvious enough. But how are such cases to be discriminated? The only mode in which it can be done, is, by an examination of the sediment in the urine, which will be found to consist of red sand chiefly, and, if there be any fragments of calculus, by subjecting these to an analysis.

AQUA CALCIS.

Lime-water was once considered as a real lithontriptic. Ever proving so, it can only be by acting on the albuminous matter, which serves as a cement to the different strata, or particles of urinary calculi. That, out of the body, it has the power of destroying the cohesion in this case, has been shown. But it is said, that it ought to be given in combination with an alkali, to neutralize the excess of acid in the urine, otherwise it will unite with the lime, and render it wholly inert—a process, I fear, not to be very easily adjusted in actual practice, though this is substantially

* Murray's Mat Med.

the composition of Stephens's medicine, which acquired so much celebrity as a solvent, that the English parliament was induced to purchase the secret of preparing it, at an enormous price.

Little to be regarded as a solvent, lime water sometimes proves one of the best palliatives of the pain and distress of the calculous affections. It will relieve the sufferings from stone, at the moment, and, in some instances, suspend them for a considerable time. De Haen relates the case of a man who drank eight hundred quarts of lime water in six months, and, in consequence, continued exempt from pain for three years, though the stone still remained in his bladder. To be decidedly useful in this case, it should be given in considerable quantities. In milder affections, less will do. I generally direct a wine-glass full, five or six times a day, mixed with an equal portion of new milk. Exhibited in this way, it is more pleasant, and agrees better with the stomach.

In all cases of nephritis, whether proceeding from gravel, or other causes, accompanied with disorder of stomach, as gastrodynia, sour eructations, flatulence, and nausea, lime water will be found useful. It is, perhaps, on the same principle, that it is beneficial in diabetes, a disease, which commences in some wrong action of the stomach.*

* *Incompatible substances.*—All alkaline and metallic salts, phosphates, borates, tartrates, and citrates, acids, sulphur, spirituous preparations, the infusions of orange peel, columbo, cinchona, rhubarb, senna, and all vegetable astringents.

MAGNESIA.

In the course of the last few years, much has been said of the value of magnesia, in calculous affections. To Mr. Brande, one of the most enterprising of the European experimentalists, we owe the credit of this discovery. Denying the lithontriptic power of any substance with which we are at present acquainted, he was induced to institute an enquiry, with a view of ascertaining some means of preventing the formation of uric acid. Comparative trials with the alkalies and magnesia, satisfied him of the decidedly superior efficacy of the latter article, and the practice deduced from it, is illustrated by several cases.

It appears on the whole, that while magnesia is well adapted to gravel, it will, most probably, render little service in stone. There is, in some instances, a material difference in the two complaints. The red sediment of urine is simply the uric acid, and is usually met with in gouty and dyspeptic persons, somewhat advanced in life. Children, on the contrary, are subject to stone, the composition of which is, for the most part, the triple phosphate of ammonia and magnesia, sometimes combined with the phosphate of lime, on which magnesia will not act. Even limiting its utility, however, to gravel, it is still an important accession to our stock of remedies, for, surely there is

no case which sometimes is more painful, or proves more difficult of management.

Whether magnesia be calcined or not, is of no great consequence. The sub-carbonate Mr. Brande seems rather to prefer, except when there is much flatulency. "This remedy," says he, "is particularly commendable, where the alkalies have been employed for a long time, when they excite indigestion, or disagree with the bowels, or where the red sand continues to be formed, even during their use." My own experience does not enable me to say much in favour of magnesia, in this new application of it, and, I confess, on the whole, I have been rather disappointed. We learn, indeed, from Marcet, a writer of great authority, "that such is the tendency which the public has to overrate the utility of a new practice, or to take a mistaken view of its proper application, that there is every reason to believe that the use of magnesia has, of late years, become a frequent source of evil in calculous complaints." During its employment the bowels are to be attended to, and where there is any suspicion of its accumulating, to prevent concretions it is to be worked off by a mild purgative, or corrected by the occasional use of acids.

MINERAL ACIDS.

Nothing illustrates much more strikingly the difference in the composition of urinary calculi, than that

remedies so directly the reverse of each other as the alkalies and acids prove serviceable in these affections. The muriatic, as well as the nitrous acid, has acquired some reputation in Europe, as a lithontriptic. It is now about eight or ten years since some cases were recorded in the periodical journals, of the efficacy of the muriatic acid especially. More recently, Mr. Copeland, a surgeon of London, has called the attention of practitioners to both of these acids, and, from comparative trials, he is led to believe, that the nitrous has superior powers.

These reports have, in some degree, been confirmed. We learn from Mr. Brande, that all the mineral acids are occasionally useful, and may be varied, as the case requires. The nitric, he thinks, is most apt to disagree with the stomach—the muriatic less so, and the sulphuric, being tonic, admits of longer continuance.

It is stated, that where these acids agree with the stomach, they are usually so effectual, that in a few days they diminish or entirely prevent the sabulous deposits. Disagreeing, however, they rather increase the quantity, and irritate the coats of the bladder to throw out mucus, which, by agglutinating the particles of sand, may lay the foundation of stone. They, moreover, prove offensive to children, who are particularly liable to depositions of the phosphates: on these accounts, it becomes necessary to recur to another mode of treatment, consisting in the employment of the vegetable acids.

VEGETABLE ACIDS.

Of these, the *tartaric acid*, either in its pure form, or as it exists in cremor tartar, answers pretty well, in the dose of from five to twenty grains of the former, and, of the latter, from a scruple to a drachm, dissolved in barley water, or any other convenient vehicle. The *citric acid*, however, is represented as preferable, given in the same way, in the dose of from five to thirty grains. Of the use of the vegetable acids, I know nothing myself. But, coming from such high authority as Mr. Brande, I should presume them to be entitled to some confidence.

As in the case of alkalies, an objection has been started to the use of acids, in calculus. It is said, that, if the stone consist chiefly of phosphate of ammonia and magnesia, instead of producing a solution of it by the introduction of acids, we should occasion a deposition of uric acid. But, in all these cases, we must attend to the state of the urine, endeavour to ascertain its constitution, and the influence of the remedies upon it, as well as their effects on the comfort of the patient, and suspend or vary them accordingly.

TEREBINTHINÆ OLEUM.

The relation which the terebinthines bear to the urinary organs, is well established. But in no case

do they display more valuable powers, than in the correction of the lithic diathesis, and the alleviation of the pain of a nephritic paroxysm. Of the different preparations of turpentine, the oil is to be preferred for these purposes, and its effects are often very extraordinary. I have known a single dose to put an end to the deposition of red sand, and, at the same time, relieve the most acute suffering, with the promptness of an opiate. On what principle it operates is not very intelligible, though it would seem that its appearance in the bladder is necessary to its success. I am told by Dr. Physick, to whom I owe much of the information which I possess on the subject of this article, that whenever it has failed with him, the *violet odour* was wanting in the urine.

It may be directed in these cases, in the dose of from ten to twenty drops, several times a day, and the best mode of exhibition, is on a tea spoonful of powdered sugar, to be washed down with a little water.

ARBUTUS UVA URSI.

The bitters and astringents are, probably, in some degree, without an exception, antilithic, though it is more conspicuously the case with gentian, quassia, centaury, camomile, the hop, and uva ursi. It is however, affirmed, that common tea is largely endued with this property, so much so, indeed, that in China,

where the article is so copiously consumed, it appears that calculous affections are wholly unknown.

The employment of astringents with this view, is an ancient practice, which has prevailed at all subsequent times. By some it has been presumed, that several, or the whole, of this class of remedies have strictly the lithontriptic property. But it is now clearly ascertained, they are productive of no such effect. Their *modus operandi*, in these cases, is, however, not distinctly understood. Cullen conjectures, though erroneously, that they operate by absorbing the acid which is evolved in the stomach. It appears more probable, that they act only by restoring the healthy tone and condition of the digestive process, and thereby hinder the further generation of lithic matter. But it is no less ascertained, that, continued too long, they are productive of an opposite effect, or, by debilitating the stomach, promote the calculous diathesis.

The *uva ursi* is found both in Europe and this country, growing plentifully in all the northern states. It is also known by the provincial names of bear berry, bear's whortle berry, wild cranberry, &c.

As a diuretic, it was employed so early as the time of Galen, and its other properties being ascertained, it is now generally prescribed in calculous affections. De Haen, to whom we are indebted for much of our knowledge relative to it, speaks most favourably of it in these cases, as well as in purulent discharges from the urinary organs, though he distrusts its efficacy when much derangement exists

by ulceration, or otherwise, of the kidneys or bladder. No doubt, however, it is best adapted to nephritis, in all the forms of which I have prescribed it, and occasionally with advantage. It is a popular remedy in this city, and has the confidence of many of our most respectable practitioners. Being without any very positive action, and especially on the blood vessels, it may be exhibited in almost every state of the system, and in nearly every variety of the diseases of the urinary organs. To its great efficacy in some of these cases, we have the testimony of Ferriar. "I have," says he, "given this medicine in a considerable number of nephritic affections, in very moderate doses, and always with manifest advantage. When the pain is very acute, and the pulse quick, I begin the cure with bleeding, and a gentle purgative, composed of manna and a neutral salt. This purgative I repeat twice a week, and, on the intermediate days, direct the patient to take five grains of the uva ursi, and half a grain of opium, three or four times a day, according to the urgency of the symptoms. I have never found larger doses necessary. This method always relieves, and generally effects a cure. Of sixteen patients, treated in this manner, I have discharged twelve, cured. In reckoning the cures, I do not rest on the cessation of a single fit, but require a permanent relief from pain. Many of my patients have used the remedy for several months together, before this end was attained. The fits became slighter, and

at length ceased.” The annexed prescription is that of Ferriar, which is now generally adopted.*

Catarrhus vesicæ I have seen relieved by uva ursi, and strangury from blisters not less so. But in the former complaint, its use ought generally to be preceded by those remedies, which are more directly calculated to subdue inflammatory action, a state, of which it always partakes in the commencement.

Most of those who have tried uva ursi in diabetes, seem pleased with its effects. It is now much used, both in Europe and this country, and some of the few cases of the disease which have come under my care, were treated partly by it. Yet, diabetes can rarely be cured by any one remedy. It is mostly complicated in its nature, often highly febrile, and exacting copious venesection, and purging, as preliminary measures. After the system is brought down to the point when tonics are proper, then the uva ursi may be resorted to with advantage. Here it operates principally by imparting tone to the stomach, though, by its affinity to the kidneys, it may, at the same time, do away or mitigate the affection of these organs. That it is beneficial in the first view I am satisfied, from having witnessed its efficacy in the ordinary forms of dyspepsia, and especially when the disease could be traced to a relaxed state of the stomach. It, moreover, proves serviceable in hectic fever, and, doubtless, by virtue of the same tonic property.

* R. Pulv. uva urs. Cort. Peruv. āā ʒi, Opii. gr. ss. quater in die :
bibat aq. calc. ʒii. post. sing. dos. pulver.

Entertaining the notion of its *astringency*, it has also been recommended in leucorrhœa, gleet, and in passive hæmorrhage of the uterus. But I am not sensible of having derived, in any one of these cases, the slightest advantage from it.

Of the *uva ursi*, the average dose is from twenty to thirty grains of the leaves powdered, three or four times a day. Double this quantity, however, is sometimes prescribed. It is also given in decoction or infusion.

HUMULUS LUPULUS.

I do not mean, at present, to give the general history of the hop. As an antilithic, it has long been known. We are told by Lobb, in his *Practice of Physic*, that, out of the body, it is one of the most prompt and certain of the solvents of urinary calculi, and, given internally, it affords much relief. My experience with it is confined to nephritis only. Exhibited in strong infusion, to the extent of a pint or more a day, it lulls pain, and excites the urinary discharge. The tincture of hop, which is preferred by some practitioners, is far less efficacious.

DAUCUS CAROTA.

This species of carrot grows wild in many parts of the United States. It is stated, by the late professor Barton, to be the same as the common garden vegetable, changed somewhat by the want of cultivation. But, probably, he was deceived. The wild is certainly the more powerful of the two plants, though the domesticated is not inactive. Throughout the country it is much employed in urinary complaints, and, I suspect, that confidence is not misplaced in it. I have used it in several of these affections, and particularly in gravel, with great advantage. As a diuretic, it is very certain. Exhibited merely to promote the renal secretion, we shall rarely be disappointed, and, perhaps, it ought to be placed with that assortment of medicines. It is one of the best means of relieving strangury from blisters. An infusion either of the root or seed, is used, though the latter is preferred, and may be drank as freely almost as any other herb tea.

ERIGERON HETEROPHYLLUM.

This plant, which is known in different parts of our country, by the title of *scabish* or *skerrish*, a corruption of scabious, is common to the United States

and Europe. It has much popular confidence as a diuretic, and is used in dropsy, in strangury from blisters, and the gravelly affections. By some regular practitioners, it is also prescribed, under similar circumstances, and is considered not destitute of antilithic properties. The late Dr. Wistar thought well of it in all these respects, and often used it.

Excepting to promote the operation of the more active diuretics, I have never employed it, and here, it is certainly serviceable. It is given in decoction or infusion, and may be drunk *ad libitum*, especially as it has no tendency to nauseate or otherwise distress the stomach.

ALLIUM SATIVUM.

The alliaceæ, or, at least, some of these articles, have been productive of utility in calculous affections. The garlic, which is the most powerful of the class, is a highly stimulating diuretic, and, in atony of the urinary organs, proves serviceable. By Sydenham, as well as by more modern writers, it is commended in dropsy. It has, likewise, been resorted to as a lithontriptic, and, in ancient times, was a common remedy. From some cause, however, it lost its reputation. When I was in Europe, it was employed in the hospitals, especially in nephritis. I do not, however, remember any very decided effects from it. Either the substance, by cutting the cloves

into pieces of a convenient size to be swallowed, or the juice procured by pressure, may be given. The leek is said to be also useful, and may be administered in the same manner.

In reviewing what has been said concerning their properties, it will appear, that the arrangement of many of the preceding articles, under the separate heads of antilithics and diuretics, is somewhat arbitrary, and, perhaps, useless. Excepting a few, they are all possessed of nearly the same properties, and susceptible of similar applications.

It is important to recollect, that, though occasionally more diversified, in a great majority of cases, whether of gravel or stone, the urates or phosphates exist. Being still in the gravelly state, the only one generally considered as remediable, they may be distinguished, by the first depositing a *red sand*, and the second a *white* sediment—the former requiring mainly the alkalis and magnesia, and the latter the acids, mineral or vegetable. In the *compound* calculi, it is recommended to give these articles alternately, “as the symptoms of the case, and the deposit of the urine may indicate,” which will be found exceedingly perplexing in practice—and in stone, should there be any effect, might be mischievous, by a partial solution of it, converting a smooth into a rough irregular surface, productive of pain and irritation.

Little, however, would be accomplished in most of these cases, even where relief is completely afforded

for the time, were not a recurrence of the calculous diathesis prevented. This then becomes an important indication. Though the precise nature of this diathesis may have eluded our researches, we are tolerably well acquainted with the causes which produce or heighten it. Modified as it may be, we know, that it is essentially dependent on vitiation of the digestive process, and that whatever tends to this effect, is to be avoided. Diet, of course, has a most material influence. This subject having lately engaged attention, much has been written upon it which I cannot notice. Yet I deem it right to cite the general conclusions drawn from an extensive enquiry, conducted by an experimentalist, alike distinguished by ingenuity and accuracy.*

Treating of the influence of ingesta on the urinary deposits, he infers,

“ 1. That acid and acescent matters, tend to increase the deposition of lithic acid from the urine, and to prevent that of the phosphates.

“ 2. That a diet composed of a large proportion of animal food, tends to lessen the deposition of lithic acid, and to increase that of the phosphates.

“ 3. That every thing which promotes the action of the skin, tends to prevent the deposition of lithic acid, and to occasion that of the phosphates.

“ 4. That dyspepsia tends to increase the deposition of the lithic acid, and to lessen that of the phos-

* Wilson Philip.

phates, both by producing acidity of the *primæ viæ*, and by rendering the skin inactive.

“ 5. That indolence has the same tendency, both by inducing dyspepsia, and by lessening the activity of the skin, in proportion as it impairs the vigour of the circulation.

“ 6. That an acid passes by insensible as well as sensible perspiration.”*

Though it results from the preceding observations, that the two common diatheses may proceed from opposite kinds of ingesta, it is not less obvious, that each operates by deranging the process of chylification. In most instances, this derangement is more conspicuous in relation to the phosphates, than the urates, as indicated by the general condition. Nearly always, there is flatulence, nausea, obstinate costiveness, or a peculiarly debilitating diarrhœa, alternately prevailing—the stools either black or clay-coloured, or like yeast—with a sallow haggard expression of countenance, and finally symptoms analogous to those of diabetes.†

Great, however, as is the influence of ingesta, they are not the only cause of the two diatheses. The *lithic* is also produced, particularly where a predisposition to it exists, by inordinate exercise of the mind or body, or by too little at other times, or by whatever raises preternatural excitement, or the reverse, a state of debility : and the *phosphatic*, under similar

* Transactions of the Royal College of Physicians, Vol. VI.

† Prout.

circumstances, by nervous irritation, from mental anxiety or distress, as well as by a long use of *alkaline* remedies—and, as often happens, by injuries of the back from blows or strains,—all tending, in their primary or secondary effects, to disturbance of the gastric functions.*†

Being admitted that each diathesis, with its modifications, originates in a disordered state of the chylopoietic apparatus, the system of prophylaxis becomes plain and easy. It consists in the avoidance or counteraction of the causes, by a careful adaptation of diet, clothing, exercise, and, in every other respect, duly regulating the habits and practices of life. Keeping in view the course of prevention, applicable to the several dyspeptic states, we shall be supplied with a guide, essentially to be trusted in the cases before us. In closing my remarks on this important subject, I feel sensibly the imperfection of the plan of treatment which I have suggested. But to have entered more into details would have been an improper invasion of the province of practical medicine, on which I have already trespassed to an unusual extent. To the late writings of Brande, Marcet, Wilson, Hutchinson, Prout, and Majendie, I refer for the amplest information on the pathology and treatment of the calculous affections, in all their varieties and modifications.

* Prout.

† It is curious to trace the influence of climate, and of certain local positions and habits of life, in the production of calculi. We learn that such complaints are rare in the tropics, very abundant in districts of the same country ostensibly alike, as the county of Norfolk, in England—and are nearly unknown among sailors.

SECTION XVIII.

Emmenagoga, or Emmenagogues.

THESE constitute a class of articles supposed to promote the menstrual discharge. The precariousness of their operation has long been a subject of complaint among practitioners, who are much consulted in the diseases of women. It does not seem that this uncertainty of effect is owing, as is generally imagined, to the want of power in these medicines to produce specific impressions on the uterus. Many of them, unquestionably, are possessed of such a property, and which is as distinctly manifested as the action of diuretics on the kidneys, or sudorifics on the skin. The true source of the failure of our practice in these cases, may be traced to the incorrect views entertained of the process of menstruation, and still more to our having overlooked, in the application of remedies, the very different states of the system with which the suppression of the catamenia may be connected.

Hitherto our practice has been, for the most part, exceedingly empirical. We have advanced blindly on, prescribing for the disease only, without advert- ing to those various circumstances which modify the action of remedies, and influence, most materially, the ultimate results. To avoid this error, I shall com- mence my account of emmenagogues, with some brief remarks on the nature of the menstrual process, a knowledge of which, in its healthy state, seems to be necessary to a just comprehension of its morbid derangements.

Contrary to a generally received opinion, that the discharge is a mere effusion of blood, I hold it to be a *peculiar* fluid, produced by a *genuine secretory ac- tion* of the uterus. Could I indulge in any lengthened examination of the subject, it would, I think, be easy to show, that every other hypothesis concerning this function is utterly irreconcilable with facts, and re- pugnant to the laws of the animal economy. Many, indeed, of the crude notions of former times, in rela- tion to it, may be considered as discarded. No one, for instance, at present, whose knowledge has kept pace with the improvement of physiology, thinks of imputing it to lunar influence, fermentation, venereal appetite, or general plethora.

Local congestion is the only one of the older hypo- theses which is now at all entertained. That there is an increased determination of blood to the uterus at the period of menstruation, cannot be denied. But what does this prove? Every gland, when excited by

its appropriate stimulus, becomes a *centre of fluxion*, towards which blood is directed. This is common to all the secretory organs, though it is more strikingly observable in those called only into action periodically. As the secretions are produced out of materials supplied by the blood, the effect I have stated, is, indeed, absolutely necessary to the due performance of the function, and, so far, the hypothesis is well founded. But, were this topical accumulation the only circumstance in the process of menstruation, the discharge would be *pure blood*, which it is not confessedly. Glands require, for the exercise of their secretory office, to be excited by some specific impression. The testicle is stimulated by lascivious desires to the elaboration of semen, and the uterus, in the same way, is called into action by an influence derived from the ovaries. That the latter is true, is sufficiently proved by the fact, that where these organs are wanting, or much diseased, a retention, or suppression, of the menses uniformly happens.

It is not my intention to enter into a formal exposition or defence of the doctrine of secretion. My object, at present, is merely to bring forward a summary of the leading arguments by which it is maintained.

1. The uterus, in its villous and vascular structure, resembles a gland, and also in its diseases, being equally liable to scirrhus, cancer, &c.

2. Like other secretory organs, blood is very copiously diffused through it.

3. By the arrangements of its vessels, it is evidently designed, that the circulation should be retarded for the *purpose of secretion*. The arteries are not only exceedingly convoluted, but they are larger, and with thinner coats, than their corresponding veins. The "blood," says Haller, is "brought to the womb in greater quantity, and more quickly, through its lax and ample arteries, and, on account of the rigidity and narrowness of the veins, it returns with *difficulty*."

4. In common with other secretions, menstruation is often, at first, imperfectly performed, and is subject afterwards to vitiation and derangement. In the beginning, the discharge is generally thin, colourless, and deficient, recurring at protracted and irregular intervals, being analogous, in some of these particulars, to the seminal secretion.

5. In many of the inferior animals, during the season of venereal incalescence, there is an uterine effusion, undoubtedly a *secretion*, which answers, seemingly, the same end as menstruation, namely, giving to the uterus an *aptitude to conception*: though this fluid usually differs from the menses in complexion, it is, in some instances, precisely similar. Whenever the venereal desire suffers a violent exacerbation, from restraint, or other causes, the discharge, in these animals, becomes red, as has been more particularly remarked in bitches kept from the male.

The menses being suppressed, they cannot be restored merely by inducing plethora, nor the flow checked by venesection, or any other means of deple-

tion, besides which, no vicarious discharge entirely relieves the symptoms of suppression.

Lastly, the menses are a fluid *sui generis*, or, at least, varying essentially from blood, having neither its colour, nor odour, nor coagulability, and on chemical analysis present *different results*. The fluid differs from blood, among other respects, in the want of fibrin.

To the objection, which has sometimes been urged, that the uterus is not sufficiently glandular for the office alleged, it may be satisfactorily replied, that there is hardly a viscus, or surface of the body, which is not competent to this purpose. It would really seem, that no operation of the animal economy requires a less complex apparatus. Of what, indeed, does a gland consist, except a congeries of vessels? Even the most perfect of the secretions are accomplished by this simple contrivance. If a few vessels, "creeping through the coats of the stomach," can secrete the gastric liquor, why may not the infinitely more glandular organization of the uterus, elaborate the menstrual fluid?

We know of no glandular structure in vegetables: they contain only tubes or vessels, through which the fluids circulate. Notwithstanding, however, the want of glands, we find the sap of plants converted into oil, mucilage, acids, &c. Than this, surely, no stronger proof can be required of the extreme simplicity of the organs by which the secretory transformations are effected!

Who originally suggested the theory of secretion, I have not been able to ascertain. It has generally been ascribed to the celebrated Mr. Hunter, though, I suspect, on very slender grounds. The only trace of it, which I can discover in his writings, is a vague expression in a paragraph of his Treatise on the Blood. Afterwards, however, he furnished an extract from his Lectures, to be published in Johnson's Midwifery, as exhibiting more fully his notions respecting this function. Treating of the death of the blood from lightning, and other sudden causes, he includes the catamenia among the illustrations of his reasonings. "The blood," says he, "discharged in menstruation, is neither similar to blood taken from a vein of the same person, nor to that extravasated by an accident in any other part of the body—but is a species of blood, changed, separated, or thrown off from the common mass by an action of the vessels of the uterus, in a process similar to secretion, by which action the blood having lost its vital principle, does not coagulate."*

By admitting the preceding theory, we have, at once, an explanation of the *modus operandi* of emmenagogues. It follows, necessarily, from the concession, that amenorrhœa is caused by an interruption of the secretory action of the uterus, and that the re-

* I am told that the theory is fully developed, in an inaugural thesis, by Dr. Craven, published at Edinburgh, in 1778, and that it may also be found in Bordieu's "*Traité des Glandes*."

medies which remove the suppression, operate by bringing the organ back to that precise condition, on which the exercise of the function depends. In order to effect this purpose, however, we must, in the first place, accurately ascertain the state of the system, and apply, with equal discrimination, the appropriate remedy.

Connected as amenorrhœa is, very often, with an exceedingly debilitated and flaccid condition of system, the case will be found to be most advantageously managed, at least in the commencement, by the cold bath, exercise, change of air, generous diet, and by some of the tonic medicines, among which, the bark and the preparations of steel are to be preferred.* Nor is it unusual to unite with the preceding medicines the fœtid gums, or castor or musk, it being maintained, that where the suppression depends on an irregular convulsive action of the uterus, they are serviceable. Of the antispasmodics, I have employed no one except asafœtida. Hysteria, on some occasions, is symptomatic of derangement in the uterine function—and, to relieve this distressing affection, I have given it, though not with pointed advantage. As emmenagogues, I hold the entire tribe of fœtids to be inert, or, if ever they do good, it is so rarely, as to have no solid claims to our confidence. Emetics, in

* The sulphate of iron is generally employed, and, made into pills, with an equal portion of Venice turpentine, constitutes a well known emmenagogue, sold in this city, under the title of *Bowen's Pills*.

these cases, are more effectual, and seem to operate as well by the general renovating impression which they make on the system, as by awakening sensibility in the uterus to the action of emmenagogues. Two or three times repeated, in the course of a week, I have known active vomiting of itself in several instances to restore the menstrual secretion, and still oftener prepare the way, as stated above, for the successful use of the specific remedies.

Nor is it uncommon to meet with suppression of the menses, where the pulse is active, the habit plethoric, a flushed face, inflamed eyes, accompanied by pain in the back and head, with acute or heavy uncomfortable sensations of fulness in different parts of the body. No one could hesitate a moment under such circumstances, to resort to venesection as the most prompt and effectual remedy. While it unlocks, as it were, the secretory actions, it obviates the danger which is too apt to ensue from vicarious hæmorrhages in the brain, the lungs, or some other vital organ. I have more than once seen, after a copious bleeding, the menses very speedily to flow, and the obstruction permanently removed. Nor should we neglect, as auxiliary means, to invite the circulating fluids to the lumbar region, by the interposition of active purgatives. As operating on the large intestines which lie in the vicinity of the uterus, the various preparations of aloes have been much celebrated. There can be no doubt of their superior efficacy. Combined either with calomel or myrrh, aloes always displays active

emmenagogue powers.* With the same view of causing a determination to the parts, I have sometimes applied, with marked advantage, blisters, especially to the inner part of the thighs, or over the sacrum. What, too, will be found very successfully to meet this indication, is the daily use of a semicupium of warm salt water, for half an hour at a time, and the employment of spinning the small wheel, in which the lower extremities are much exercised.

Next I proceed to notice those articles which are considered as endowed with the specific virtues of emmenagogues.

POLYGALA SENEGA.

To Dr. Hartshorne, of this city, we owe the credit of having discovered the properties of this article as an emmenagogue. Conversing with him, some years ago, on the difficulty of managing certain forms of

* Not the least valuable, however, of these combinations is one known by the name of Hooper's pills. These are made according to the annexed prescription :

R. Sal. mart. ℥ss., Pulv. jalap. ℥i., Hiera picra, ℥ss., Myrrh. ℥ss., Syrup. com. q. s. ft. mass., div. in pil.

Of these pills, which are prepared of a convenient size, two or three are taken at bed time, for several nights successively. They purge smartly, and I presume it is by virtue of this property they operate so beneficially as an emmenagogue. In the original formula, I believe castor was added. The apothecaries of this city, however, have been induced to omit it, as rendering the pills offensive, without at all increasing their efficacy.

amenorrhœa by the common remedies, he told me, that he thought he had used it with advantage in these cases. Confiding in the accuracy of his observations, I determined to lose no time in making a trial of the medicine. This I have since done, both in my public and private practice, to a considerable extent, and with sufficient success to warrant me in recommending it as one of the most active, certain, and valuable of the emmenagogues. The seneka may be used either in powder or decoction, though I greatly prefer the latter mode.* My rule in the administration of the medicine, is to direct about four ounces of the decoction, more or less, during the day, according to the circumstances of the case. But at the time when the menstrual effort is expected to be made, and till the discharge is actually induced, I increase the dose as far as the stomach will allow, having given sometimes as much as two ounces every hour.

In the interval of the menstrual periods, I lay aside the medicine for a week or two, as, without these intermissions, if it does not lose its power, it becomes nauseous and disgusting to the patient. While under such a course, the general system is to be kept properly regulated, equally obviating excessive excitement and debility, by the use of appropriate remedies.

* In making the decoction, I put a pint of boiling water to an ounce of the root, bruised, in a close vessel, and let it slowly simmer over the fire till the quantity is reduced one-third. Where the medicine excites nausea, which it is sometimes apt to do, even in small doses, I have it prepared with the addition of an aromatic, such as orange peel, or cinnamon.

Efficacious in all the forms of amenorrhœa, I think it, however, more particularly so in those cases in which the decidua exists. We are ignorant of the exact process by which this membrane is formed, though there is no doubt, that the vessels of the uterus, which pour out the catamenia, are the instruments by which it is accomplished.

Nor is it less certain, that while they are engaged either in the formation or support of this new production, menstruation ceases, the two offices exacting modes of action totally incompatible. It is obvious, under these circumstances, that to change the state of the uterus, and to excite it to a *secretory* effort, a *forcible*, as well as a *specific* impression must be made upon it. Deny to the seneka these specific energies, and where shall we seek an explanation of its effects? Being simply a stimulant, or tonic, or sudorific, as is more generally supposed, it might raise excitement, or induce diaphoresis, like many other articles. But would it be so signally efficacious as an emmenagogue?*

JUNIPERUS SABINA.

The savine is a warm, powerful, and diffusible stimulant, promoting all the secretions, determined with particular force to the uterus. It was, on this last account, long used for the purpose of accelerating partu-

* Vid. Diuretics and Expectorants.

rition, and more especially to expel the secundines. The same view of its properties has led to its employment, in order to procure abortion, in the inferior animals, and we have abundant proof of its success in these cases. By almost every one who attended to its effects it has been remarked, that it is singularly prone to produce hæmorrhage, and more frequently from the uterus than any other part. These properties obviously pointed it out as an emmenagogue, and accordingly, as such, it was, at an early period, resorted to, though the first distinct and satisfactory report which we have of its use, was made about half a century ago, by Home of Edinburgh, who gave the strongest testimony in its favour. The higher authority of Cullen, however, by whom it is slightly spoken of, seems to have abated much of the confidence previously inspired, and to have brought it, in a certain degree, into disrepute. Yet, as an emmenagogue, it has always been held in some estimation, and is, even now, occasionally employed.

On the whole, I think the medicine worthy of a fairer trial, than perhaps has been made with it. Like the remedies generally, in amenorrhœa, I suspect that it has been too indiscriminately employed. Whenever it is administered, we should recollect how active are its properties, and, of course, that it is only applicable to such cases as are accompanied with extreme atony of the uterine system. Of the powdered leaves; the dose is fifteen or twenty grains.*

* Vid. Diaphoretics.

RUBIA TINCTORUM.

It is the root of this plant, cultivated in Holland, as an article of commerce, which furnishes the madder of the shops. Taken internally, it tinges the urine as well as the bones of a red colour. It was on account of this wide-pervading operation, that it came to be considered by the older physicians as a deobstruent. Cullen, thinking it to have hurtful or injurious properties, rather discountenances its use. As an emmenagogue, he entertained not the slightest confidence in it. Many respectable practitioners, however, and among these the late Professor Barton, make a very different report of the medicine.

“In my employment,” says he, “of the powder of madder, both in public and private practice, I have so frequently observed it to show considerable effects upon the uterus, that it is without any degree of hesitation, that I speak of it as a remedy worthy of the attention of practitioners. It appears to be suited both to cases of retention and suppression of the menses, though it is chiefly in the latter condition that I have employed it.

Being convinced, that we are in possession of many articles of the same class infinitely more efficacious, I have never prescribed the madder. The ordinary dose of it is from twenty to thirty grains. Much more, however, may be given with perfect safety.

ROSEMARINUS OFFICINALIS.

This is a plant which grows wild in all the south of Europe, and is now cultivated in our gardens. It has an aromatic smell, and a warm pungent taste. In the form of decoction, it proves an active and diffusible stimulant, operating with considerable force on the nervous system : hence it is said to be serviceable in hysteria, palsy, vertigo, &c. As an emmenagogue, it is favourably mentioned by Bergius and other writers, though by Cullen it is contemptuously noticed. I think it is an article of some virtue, having used it in several cases with success. It is a popular remedy in this city. The usual mode of administering it is, a common tumbler-full of the strong infusion for three successive nights, and then to intermit it for a short period.

MENTHA PULEGIUM.

The pulegium has been supposed to have a particular relation to the uterus, and hence its efficacy as an emmenagogue. Linnæus, indeed, maintains, that every variety of mint acts so strongly on this organ, that hæmorrhage is very apt to be the consequence of its free use. But I suspect he was deceived

in this respect, since his observations have never been confirmed.

Entertaining the same impression as to its power, Haller tells us, that, combined with steel, it is an infallible emmenagogue. This, however, is language much too strong and unqualified, the medicine having been used by many practitioners without any such infallibility. Cullen, who is more or less a sceptic with regard to all the emmenagogues, speaks in the following terms of the pulegium: "Another use," says he, "of it, as an antispasmodic, has been commonly asserted, which is, that it assists the menstrual evacuations of the female sex. This, however, I believe to be on no better foundation. At the time of menstruation the sex are often affected with dyspeptic and spasmodic symptoms in the stomach, and I have known these symptoms relieved by an infusion of the pulegium, or, as it is commonly called, the pennyroyal tea. But the same relief has been obtained more certainly by the use of peppermint, or the *mentha crispa*, though in none of them any specific power can be perceived. They have often been tried in cases of suppressed menses, and without any benefit at all."

I am unwilling to advance any opinion concerning it, excepting, that, from the general properties of the plant, and its analogy to the rosemary, which I know to be useful, I should presume it not to be entirely destitute of such properties. It is a remedy in high repute in domestic practice—and popular confidence,

even though confined to the vulgar, is scarcely ever without some foundation.

CUNILA PULEGOIDES.

This is a native plant, nearly allied to the former by its medicinal properties, though placed by Linnaeus in another order—and is also called *pennyroyal*. Like the foreign plant, it has a large share of popular confidence, in amenorrhœa, and is, probably, useful. But I have no knowledge of it, except as a carminative, and a diaphoretic, well calculated to promote the operation of the stimulating articles of the latter class. It is prescribed in infusion, without much regard to quantity.

TANACETUM VULGARE.

Tansy has some reputation as an emmenagogue, and, from what I have seen of its effects, I suspect deservedly. It is usually prescribed as a tea, of which the dose is one or two ounces, to be repeated morning and evening.*

* Vid. Anthelmintics.

HELLEBORUS NIGER.

The black hellebore was first introduced as an emmenagogue into practice by the celebrated Meade, who proclaimed its efficacy in the strongest terms. By his recommendation, it continued to be generally employed, till the time of Cullen, who, in the spirit of distrust which he entertained with regard to all such medicines, pronounced it to be a feeble and precarious remedy. Controlled by his authority, practitioners seemed for some time to have nearly abandoned it—but it has once more regained its reputation, and, by some of our best practitioners, is considered as the most valuable of the emmenagogues. Without going quite so far in its praise, I must unite in saying, that it has many just pretensions. It is especially useful when it purges, in scanty menstruation, attended with torpor and constipation of the bowels, and, perhaps, with some degree of insensibility in the uterus itself. Of the powder of hellebore the dose is ten grains, given in the form of pills, which may be repeated for several days. The *Tinctura Melampodii*, however, is more commonly prescribed in the dose of from thirty to forty drops, every three or four hours, gradually increasing the quantity, so long as the stomach will bear it, without nausea or vomiting.

To the articles enumerated, I might, perhaps, add the cantharides, the terebinthinate preparations, and phosphorus, each of which has sometimes been placed among the emmenagogues. But having tried the first two especially, to a sufficient extent to satisfy myself that they display no such properties, I shall dismiss them without any further observations.*

SECALE CORNUTUM.

I do not know that I am right in placing this article among the emmenagogues. But, I cannot give it another position with more propriety.

Of the natural history of this extraordinary production, I shall not say much. Nor, indeed, is this exactly the place for such a discussion. It is sufficient

* I have lately met with the following notice of the use of ammonia, as an emmenagogue. M. Lavagna, of Italy, proposes the injection of it into the vagina, and gives fourteen cases of amenorrhœa, in which the practice succeeded, sometimes in twenty-four hours, and, at most, in five or six days, not only to produce the discharge, but to remove the paleness, oppression, difficulty of breathing, anorexia, weakness, &c. The proportion of the article employed, was ten or twelve drops of the alkali, in two spoonfuls of milk, often repeated in the course of the day. It generally excited in the vagina a sensation more or less painful, according to the strength of the mixture, and susceptibility of the part, though in no case was there any troublesome or dangerous effect.—*Biblioteca Italiana*.

for my present purpose to remark, that it has long been known, that more than one of the granivorous plants, as well as some of the grasses, are liable to a disease denominated *clavus*. The substance thus produced is, however, more generally recognised by the French vernacular title of *ergot*, or that of England and this country, the *horned rye*, *spurred rye*, &c. By medical men, it is called *secale cornutum*.

Of the different kinds of grain, it seems that rye is most apt to take on this morbid condition, and particularly in a low damp soil, or where exposed to an intense heat, succeeding continued rains. It is further stated, that it occurs more abundantly on the margin of fields, than in the central parts, and that new grounds, or those lately cleared, are more favourable to it than such as have been long cultivated.

Among the many conjectures as to its origin, it has been presumed to proceed from small larvæ: others have traced it to a species of fermentation, at least as a preliminary step, in the plant—and we have facts to warrant, in a degree, the suspicion of its being propagated by contagion.* But, on the whole, it most probably arises, like the several sorts of smut or blight, from a mushroom of the genus *sclerotium*, of a parasitical nature.†

Ergot is an elongated excrescence, which fills the

* The Abbe Fontana planted a number of single grains of rye, and, upon the top of each, placed several grains of ergot. The result was, a crop of this substance, showing something similar to infection, which, however, might be owing to larvæ.

† This is the hypothesis of De Condolle.

place of the seed within the glume or husk of rye, &c. of an irregular curved form, somewhat like the spur of a cock—of a dark colour, unpleasant taste, and brittle texture.

It has been a generally received opinion in Europe for a century or two, that bread made of grain vitiated in this way, occasions diseases of a very extensive and violent description. Of these, however, the most common is a species of dry gangrene, pervading, at the same time, entire districts of country.* Disorders of a different nature, such as low fevers, and the various bowel affections, which prevailed, at one period, among our troops on the Canadian frontier, to an alarming extent, were ascribed by some of the medical men of the army to this cause, though on what foundation, I am not sufficiently informed to determine.

As an article of the *materia medica*, the credit of establishing it, must be conceded to this country.† It is now ten or fifteen years since Dr. Stearns, of the state of New-York, published an account of its wonderful powers in accelerating lingering labours. By a large number of practitioners it has since been tried with the same view, and though there may be some

* This is no longer doubtful. By a series of well-conducted experiments, Dr. Charles Byrd has shown that pigs, ducks, and fowls, eating, for a week or two, food containing the ergot, acquire a gangrenous state, by which the former lose their hoofs, and the latter their bills, &c. These experiments are contained in his *Inaugural Essay*, 1821.

† As a means to promote labour, it was, no doubt, earlier employed in France. But the practice seems not to have been regulated with any propriety, and ceased after a short time.

difference of opinion in relation to the degree of its utility, we have the most ample attestations in its favour. My own experience with it, which is by no means narrow, enables me to speak positively of its powers in this respect. The same impression is entertained of it by my medical friends, engaged in the practice of midwifery in this city. I have been supplied with some very strong facts of a similar purport from my correspondents, and still more might be collected from the medical journals of our country. Though its powers, in this respect, seem to be sufficiently admitted, some discrimination is required in the selection of appropriate cases, as well as caution, in the use of the article.

The mode in which I have been accustomed to prescribe it, is to dissolve a drachm of the powder in a small portion of water, and to give one third of it every half hour, till the effect is induced. Not more than ten or fifteen minutes elapse before the uterus is excited into strong and violent pains, which, in all cases that have come under my notice, continued with little or no intermission or abatement, for a very short time, and then entirely ceased.

From the violence of the action of this medicine, it will always be prudent, previously to directing it, to ascertain that the os tincæ is pretty well dilated, otherwise we shall expose the patient to much pain, or, perhaps, even to a rupture of the uterus. As the ergot has not the slightest tendency to overcome the rigidity of the soft passages, we must, under such

circumstances, if inadmissible, recur to copious venesection and other relaxing measures. With this precaution, I have every reason to believe, that it may with perfect safety be used in lingering labour, from atony of the uterus—and, in almost every instance, with such effect, as to render unnecessary the application of the forceps. It has also been prescribed with success, to promote delivery, in labour with puerperal convulsions.

It is not unknown to me, that it is alleged sometimes to destroy the life of the child. Were it true, this would, indeed, be a most discouraging consideration. But, I am convinced, that the objection is unfounded. By myself, and other practitioners of this city, it has been used, in upwards of two hundred cases, without doing harm in any respect, and this is pretty strongly confirmed by reports from other places.* No doubt, however, from the protracted and difficult labours in which the ergot is prescribed, that the child will, sometimes, be born dead, independently of any agency of the medicine, though no such instance has come within my own observation.

Experiments made with much accuracy, by more than one of the graduates of this university,† show

* On this point I speak with certainty. I have applied to professor James, and Dr. Dewees, and other accoucheurs of this city, and find that the aggregate of cases, including my own, in which the ergot has been given, amounts to the number I have stated. No one, here, believes in the alleged deleterious influence of the article on the fœtus.

† The Thesis of Dr. Erskine contains some fine experiments to this purpose.

that ergot, in whatever manner exhibited, has little or no operation on the system of the male. The pulse is neither elevated nor depressed by it, and, excepting some nausea, or vomiting from large doses, no other effect is manifested. To the uterus, its whole force seems to be exclusively directed. Given to pregnant animals, it never fails, in a short time, to occasion abortion, and in women not with child, some uneasiness about the womb is generally experienced after taking it.

Its direct affinity to the uterus would seem to confer on the ergot strong pretensions as an emmenagogue. But repeated trials have convinced me, that it is slenderly possessed of such powers. Nor, perhaps, is it difficult to account for its inefficacy in these cases. As already stated, amenorrhœa depends on a wrong or perverted action of the uterus, for the most part slowly induced, and to remove which, a gradual and steady impression on that viscus is required. Of all the articles of the *Materia Medica*, ergot is most transitory in its effects, and hence little suited to remove any obstinate or deeply confirmed morbid derangement. By its prompt and powerful action, it is better adapted to some of the forms of dysmenorrhœa. I have seen it in two instances afford much relief by bringing away the deciduous lining of the uterus.

Much more advantage would appear to have resulted from its employment in uterine hæmorrhage, which, indeed, might have been anticipated from its acknowledged power in exciting uterine contractions.

Though I have never prescribed it with this view, its utility rests on authority which may not be disputed. It is said, more speedily than any other article, to restrain floodings both before and, after delivery, and given during parturition, in women previously accustomed to profuse discharges, to act effectually as a preventive. There may be some exaggeration in the preceding statements, though, on the whole, it seems, that in this, as in every other application of the article, it will be found essentially useful, and that, in whatever light it may be contemplated, it presents the strongest claims to our curiosity and attention.

In closing my remarks on emmenagogues, I must say a few words in relation to one of the most distressing forms of amenorrhœa, which, to a certain extent, demands a peculiar treatment. Menstruation is occasionally performed with great pain and difficulty, and the discharge comes away slowly and deficiently. This state of the uterine function is called *dysmenorrhœa*, and depends on a perversion of the secretory action of the uterus, by which sometimes an extraneous membrane is produced. The remedies here are to be adapted to the condition of the system. Commonly it is associated with increased action, and, where this is the case, blood-letting is indispensable. The warm bath is highly serviceable, and also fomen-

tations to the region of the uterus. The extract, both of henbane and of hemlock, has been much extolled in these cases, with neither of which medicines have I any experience. It would be well to try further the stramonium, which I have used advantageously. The remedy, however, entitled to the greatest confidence in painful menstruation, is a combination of opium and camphor. I resort to it habitually, and scarcely ever without success. It is to be exhibited in the proportion of two grains of the first to ten of the second article. Cases will occasionally occur where the sufferings are so severe as to demand the most immediate relief, and, under such circumstances, an anodyne injection sometimes operates very efficaciously.

To do away that state of the uterus, on which this particular form of amenorrhœa depends, some of the best means have already been mentioned. To these may be added, the volatile tincture of gum guaiacum. My knowledge of it is not great, having only used it in some few cases. But it is spoken of in very high terms by my friend Dr. Dewees, of this city, who has had more opportunities of determining its effects.

He entirely concurs in the opinion which I have delivered, that difficult and painful menstruation is most commonly owing to the existence of the deciduous membrane, and that the healthy functions of the uterus can only be restored by its expulsion.*

* As the tincture he recommends is somewhat different from that of the shops, I subjoin his formula.

“ R. Pulv. gum. guaiac. ℥viii. Carb. sod. vel. potas. ℥ij. Pulv. piment. ℥ij. Alcohol. dilut. ℔ii.

“ The volatile spirit of sal ammoniac to be added *pro re nata*, in the

Notwithstanding the numerous remedies already detailed, we are not to lose sight of mercury in this disease. By a moderate salivation, continued for a week or two, we shall sometimes succeed in curing amenorrhœa, in its different forms, when every other mode of treatment has failed.

I have now completed the consideration of Emmenagogues. It would have been easy to have swelled the number of these articles to an indefinite extent. In the uncertainty of our practice in these cases, we have floundered about, trying almost every variety of medicine, without rule or discrimination. By the manner in which I have distributed the articles, and the principles that have been suggested, I hope our practice may be less empirical than, for the most part, it has hitherto been. But, in the treatment of amenorrhœa, we must be prepared for disappointment. As before stated, the secretion of the menses is somehow influenced by the ovaries. These organs are liable to a variety of diseases, and, when in this state, a cessation of the function is usually the consequence, and, for the time, cannot be restored. Cases of this sort are, however, comparatively rare, and, by constantly keeping in view the condition of the system, and applying our remedies accordingly, we shall seldom fail in the management of the different forms of amenorrhœa.

proportion of a drachm to every four ounces of the tincture, less or more, agreeably to the state of the system."

Vid. Coxe's Medical Museum, vol. iii.

To cure this disease is a matter of the utmost importance. No one state of the system has greater influence over health, or is attended with such extreme anxiety and distress. Whenever menstruation is interrupted, women are rendered uncomfortable, in body and mind. Next to the stomach and brain, the uterus exercises the widest dominion over the animal economy, and regulates, in the greatest degree, its different operations. This viscus, indeed, was considered by the earlier physiologists, on account of its multiplied relations, as a distinct animal, controlling, with undisputed sway, all the functions of the body, whether in health or disease. Even more recently, the idea of its influence has been carried to scarcely a less extent. It was thought by Van Helmont, that the uterus impresses all the peculiar and distinctive characteristics of the sex.

“ Propter solum uterum mulier est, id quod est.”

Without going so far, it must still be admitted, there is hardly a disease to which women are liable, that is not either produced or aggravated by any permanent suspension of the uterine function. This is strikingly evinced in pulmonary consumption. The two states are reciprocally cause and effect, and, with such an attendant, the pectoral affection never fails to become more inveterate, and the difficulty of cure heightened.

Whether amenorrhœa causes insanity, I am not prepared confidently to say. It is difficult, in public in-

stitutions, whence I have chiefly derived my experience, to get the exact history of cases. Of this, however, I am persuaded, that when the menses are suppressed, the restoration of the secretory action of the uterus is indispensable to recovery. Truly can I declare, that among the many cases which have come under my care, I have scarcely ever been able to effect a single cure while amenorrhœa lasted, especially if it had long existed. But often have I had occasion to remark, that the moment the discharge was induced, the mind became tranquil, and with it a subsidence of all those turbulent actions which had previously so greatly disturbed the system. Many of the more purely nervous affections, and epilepsy especially, originate, or are kept up, and rendered intractable, by the same cause. From the high importance of the function, therefore, it will always be right, in investigating the chronic complaints of women, carefully to ascertain the state of menstruation.

SECTION XIX.

Expectorantia, or Expectorants.

EXPECTORANTS are usually defined to be those medicines which promote the bronchial secretion, and facilitate the process of its ejection. But it will be presently perceived, that all the means so entitled can not be embraced by this definition.

Much difficulty is confessed, by those who have attempted an explanation of the *modus operandi* of expectorants. Cullen conjectures, that they may increase the effusion from the arteries of the lungs, which, being a thin fluid, dilutes the mucus of the pulmonary follicles, and renders its expulsion more easy.

Whether any of them act in this way has been doubted. But, since a pulmonary exhalation constantly goes on, it seems not improbable, that we may have medicines which increase this discharge, precisely as diaphoretics promote perspiration. It is, however, not less true, that all the means employed

as expectorants do not thus produce their effects. Endowed with dissimilar properties, it is reasonable to presume, that the different articles may variously operate. To this conclusion, we can hardly help being conducted, when we reflect, how opposite are the states of the lungs in which they are prescribed, and what essentially different substances are employed for this purpose.

Expectoration may be repressed, or imperfectly performed, by constriction of the bronchiæ, on the removal of which, by antispasmodics, an infinite degree of relief is afforded. It as often happens, however, that the secretion is checked or suspended by a highly inflamed state of the mucous tissue of the bronchial structure productive of equal distress, and which is most effectually overcome by direct depletion, counter irritation, and a general determination to the surface. Nor is it less apparent, that this same tissue from relaxation or debility sometimes inordinately secretes mucus or thinner fluids, to be checked by the terebinthinates or balsamics, in the first, and by the pure incitants in the second instance. Caused by tubercles, or any permanent state of irritation, this, with the consequent discharge, is best allayed, or diminished, by opiates, and the ordinary cough mixtures. When it proceeds, which it sometimes does, from an increased or morbid sensibility of the larynx or fauces, in which the lungs participate, attended by a tickling, provocative of cough, it, with its

remoter effects, may be palliated or cured by demulcents or mucilages.

It follows, from the preceding observations, that expectorants are to be considered in several points of view. But in all cases, and in whatever manner these medicines are productive of advantage, it is when introduced into the stomach, by an impression first made on that organ, and extended to the lungs, through the medium of the sympathy which so intimately and conspicuously connects these parts. Nothing is more absurd, or less capable of being reconciled with fact, than the hypothesis to be met with, even in the most recent of the writers on the *materia medica*, that expectorants operate by reaching the lungs through the circulation!

Three rules only shall I suggest for the administration of these remedies :

1. As in the use of diaphoretics, let the patient be kept warm. There is a very close consent between the skin and pulmonary organs, and we shall generally perceive that moderate warmth, and even moisture, on the surface, greatly facilitates expectoration.

2. Carefully avoid purging. As remarked on a former occasion, none of the complaints of the lungs will bear this evacuation to any extent. Besides which, the action of the secretory vessels of the lungs and intestines, would seem to be alternate and opposed. Expectoration, at least, is very apt to be suppressed or diminished by diarrhœa, or by the use of purges.

3. In the selection of the article, be guided, as far as may be, by the nature of the case in which it is to be employed.

SECTION XX.

*Particular Expectorants.*

IT is not easy, so various are the properties of these articles, to arrange them, without a minuteness of classification hardly admissible. To distribute them according to their affinities, to the different parts of the pulmonary apparatus, and particular adaptation to the various cases, would be most practically useful. But, in the present state of our knowledge, especially as regards the first point, I apprehend the plan could not be very readily effected. Perhaps our purposes may be attained by treating of them, as I have done as to the other medicines, under the general division of the mild and the active.

By some writers, the mucilaginous beverages have been placed among the more lenient expectorants, such as flax-seed tea, or barley, or rice water. But though these are useful in some of the pectoral affections, by doing away irritation about the fauces, and thereby palliating cough, they can scarcely be consi-

dered as expectorants, and may, with more propriety, be still designated by the title of demulcents.

Of the milder expectorants, some of the emetic substances are deservedly appreciated. But of these I have already said so much under preceding heads,* that little remains for me to add. It is known, that emetic tartar and ipecacuanha, particularly, are prescribed with this view, sometimes alone, though oftener in various states of combination. They are serviceable, in small doses, by inducing relaxation, and determining to the surface,—and, exciting vomiting, they emulge the bronchiæ, and expel their accumulated contents.

LICHEN ISLANDICUS.

Liverwort, or Iceland moss, as this plant is usually called, grows abundantly in the northern parts of Europe, and in the United States. The leaves are mucilaginous, and in a recent state so bitter as to be given as an anthelmintic. By the process of drying, they lose much of this quality, and afford a species of farinaceous matter, of which the Icelanders make bread. This moss has been long used in dysentery, and other bowel complaints, by the German physicians. It is at present more celebrated in catarrhal and consumptive cases, and not a little evidence might be collected of its efficacy. Allowing that it is mildly nu-

* Emetics and Diaphoretics.

trititious, and that, like mucilages generally, it allays coughing, I suspect nearly as much is conceded as can be done consistently with a just estimate of its powers. Yet, perhaps, something more may be claimed for it on the score of its tonic properties. To these must be ascribed its usefulness, in dyspepsia especially. The common mode of preparation is by boiling an ounce and a half of the leaves, previously macerated, in a quart of water over a slow fire, till a jelly is formed. If milk be preferred on any account, it may be substituted. The quantity to be used is a pint or more daily.

SESASUM ORIENTALE.

This plant, better known by the title of *Benne*, is met with in most warm climates. Originally native of Africa, it has been introduced into our southern states probably by the imported negroes, and is cultivated pretty extensively. The seeds mixed with other matters are used by them for food, and were also by the ancient Egyptians. By expression the seeds yield a larger portion of oil than perhaps any other vegetable, as bland as that of the olive, and may in most respects be substituted for it, as well in domestic economy, as for medicinal purposes. The leaves, by simple infusion, afford an excellent mucilage, agreeably esculent, which is employed by the negroes of the south in the preparation of soups. It

is found likewise to be a good demulcent, now much resorted to in diarrhœa, dysentery, in the nephritic and catarrhal affections.

GLYCYRRHIZA GLABRA.

This is a perennial plant, native of the south of Europe, which may be naturalized in almost every climate. The root only is medicinal. To the taste it is sweet, mixed with some degree of bitterness, and affords the only instance of a saccharine substance not occasioning thirst. On this account it received the title of *Adipson*.

Liquorice was once much employed in the several relations of detergent, attenuant, diuretic, demulcent, and expectorant. But, at present, its use is chiefly restricted to the alleviation of coughs, and a watery solution of the extract, alone, or in union with other articles, is preferred. This mixture is adapted to the advanced stages of the acute pneumonic affections, as well as to consumption.* I know not, indeed, any article, possessing in a higher degree the quality of calming pulmonary irritation than liquorice. Either the solution of which I have spoken, or an infusion of the root, answers well as a vehicle for the administration of many medicines, and especially of the

* R. Extract. Glycyrrh. ʒij. Aq. font. ferv. ʒiv. m. ft. solut. adde Vin. ant. ʒj. Tinct. theb. gtt. xxx. m. Of this, a table spoonful is the dose.

Peruvian bark, the unpleasant taste of which it disguises.*

MIMOSA NILOTICA.

It is said, that several different plants in Egypt furnish gum arabic, though the purest sort is the product of the one above named.

Of the gums, this is the most generally employed, and, for medicinal purposes, it might, with advantage, be made to supersede all other articles. As an expectorant, it is prescribed in tickling coughs, and still more as a demulcent in dysentery, diarrhœa, cholera infantum, &c. Nearly with the same view, it is freely given to prevent or remove strangury from blisters, and to soothe the ardor urinæ attendant on the inflammatory affections of the urethra. In pharmacy, gum-arabic is also found useful, "serving to suspend heavy powders in water, to diffuse oils, balsams, and resins in the same vehicle, and to give tenacity to substances made into pills."

It is, moreover, prescribed as an article of diet, particularly in the complaints of the alimentary canal. To this we have probably been led by its light and supposed digestible nature. That it is bland, and without stimulation, cannot be denied. Yet, I suspect, that

* *Pectoral Balsam of Liqueurice.* This nostrum consists of a rich solution of liquorice with paregoric, strongly impregnated with the oil of aniseed.

there are few matters received into the stomach, which prove less tractable to the operations of that viscus. It passes through the bowels very little changed, as I have a hundred times observed, and we are told, that it even reaches the urinary bladder pretty much in the same state. Nevertheless, there are not wanting facts to attest its nutritive qualities, and, among others, the very strong one mentioned by Hasselquist, of its sustaining, for a length of time, a caravan, whose provisions were exhausted.

ULMUS RUBRA.

This country furnishes several species of elms, all of which are, perhaps, in some degree medicinal. But it is the red or slippery elm* which is mostly employed. The inner bark of this tree, by infusion, affords a viscid, mucilaginous matter, which is now, especially by country practitioners, extensively applied. As an expectorant or demulcent, it is a favourite remedy in catarrhs, in the declining stage of pleurisy, in consumption, &c. It is also found not less beneficial in the complaints of the urinary organs, and its reputation is still better established in diarrhœa, and, above all, in dysentery. That it does good in the latter disease, and even more than other mucilages, I am inclined to believe. To this point I have much evidence in my possession, though my own

* *Ulmus rubra* of Muhlenburgh.

experience with it is limited. It is known to many, that the late Dr. Grant, of Virginia, had, for nearly half a century, an unrivalled reputation in the part of the country where he resided, in the management of dysentery. His practice, as he once informed me, consisted in little more than purging moderately in the commencement, and subsequently using freely the elm mucilage. By this alone, he declared, that the bloody stools, tormina, tenesmus, &c. were more speedily removed than by the ordinary remedies. Even admitting one half of this statement to be correct, the article will still appear highly deserving of attention.

As an external application, it has not been less employed. It forms an excellent emollient poultice, even milder, it is said, than bread and milk, or flaxseed. This is a good deal resorted to in country practice, in ulcers, recent burns, chilblains, cutaneous eruptions, and in the discussion of tumors and other swellings. By many of our army surgeons, it is highly esteemed in gun-shot wounds, and is said sometimes to be beneficial in arresting a tendency to mortification. Like other mucilaginous matters, it is nutritive, so much so that it constitutes one of the resources of our Indians in extreme emergencies.

Excepting the emetic substances, all the articles hitherto noticed, may, perhaps, be considered as demulcents. If they have any expectorant power, it is in so feeble a degree, as hardly to entitle them to a place in this latter class. But the medicines now to

be enumerated, do most unquestionably operate on the lungs; and, in some way, relieve those organs in certain states of disease.

AMMONIACUM.

Ammoniac is a gummy resinous concrete, imported from Egypt and the East Indies. Of the tree which produces it, nothing is ascertained with certainty, though it is presumed to be the *heracleum gummiferum*.*

Ammoniac was once much employed as a deobstruent in visceral obstructions. But it has so completely lost its reputation, as no longer to be prescribed in these cases. Of late, on the continent of Europe, they are recurring to its use, and I know it to have been one of the remedies of the late Dr. Wistar in hepatic obstructions. Whether it be really entitled to credit under such circumstances, my own experience does not enable me to say.

As an expectorant, its reputation is much better established, it proving highly serviceable in cases where the lungs are heavily oppressed. To the coughs of aged people, to some cases of pittingous asthma, to the advanced stages of peripneumonia notha, and, sometimes, to consumption, it is well suited.

* Willdenow raised this tree from seeds commonly found among the gum of the shops. It was before thought to be afforded by a species of *ferula*, of the same family as the plant that produces *asafetida*.

The common mode of administering ammoniac is in emulsion, denominated *lac ammoniaci*,* though it is occasionally prescribed in the shape of pills. The dose is ten or fifteen grains. Excellent as are the powers of ammoniac, they seem to be improved, in most instances, by uniting with it the squill, antimony, laudanum, &c. Nitric acid may also be added to it as directed below,† and from this mixture I have witnessed salutary effects, where a large accumulation of purulent or viscid matter existed, with feeble and difficult expectoration. Externally, ammoniac is applied as a discutient, in the form of a plaster, prepared by beating it into a soft mass with vinegar, and spread on leather. It is said to have done good in white swellings, indolent tumors, &c.

SCILLA MARITIMA.

No expectorant is more generally prescribed than the squill, and none, perhaps, is better deserving of confidence. Being actively stimulant, it requires to be directed with some circumspection. To the cases enumerated under the preceding article, it is best suited, and is often united with it in the proportion of one

* Vid. Dispensatory.

† Pour very gradually two drachms of nitric acid, diluted in eight ounces of water, on two drachms of ammoniac—to be triturated in a glass mortar till the gum is dissolved, forming a milky fluid. Of this a table spoonful may be taken every two or three hours in sweetened water. Laudanum, in some cases, may be usefully added.

or two ounces of the oxymel, or vinegar of squill, to eight ounces of the ammoniac emulsion. Exhibited alone, the dose of either of the above preparations is about a drachm. As an expectorant the squill in substance is rarely ordered.*

ALLIUM SATIVUM.†

The whole of the alliiciæ are expectorant. But garlic is decidedly the most active, and in many of its qualities resembles the squill. It may hence be given in similar cases, and, probably, with equal advantage. As an expectorant, it answers best in the shape of an oxymel, which may be prepared by digesting the garlic in vinegar, and afterwards boiling the liquid with a portion of honey. The expressed juice, mixed with syrup, is often given, and, after the reduction of febrile action, is one of the best remedies in croupy and catarrhal affections, especially in children or very old people.

FERULA ASAFÆTIDA.

This article is commonly placed among the anti-spasmodics, and I shall, under that head, treat of its general properties. But it is also expectorant, and in

* Vid. Emetics and Diuretics.

† Vid. Antilithics.

this view I must not altogether neglect it. Coughs, connected with pulmonary weakness and a tendency to spasm, are the ordinary cases in which it is employed. It is, sometimes, serviceable in tussis senilis, and of its great utility in the secondary stage of whooping-cough, there is even less doubt. The saturated watery solution is the only preparation now prescribed in these cases.*

ARUM TRIPHYLLUM.

The Indian turnip is a native of the United States. It has a bulbous root, which, in the recent state, is exceedingly acrid, emitting, on being sliced, a sharp pungent exhalation. By the process of exsiccation much of this is lost, though, in swallowing, the acrimony is still sensibly felt about the fauces. Of our indigenous plants, this has the highest reputation, in provincial practice, as a remedy in pulmonary affections. It is prescribed in phthisis pulmonalis, in asthma, and in protracted coughs. My experience with it is not extensive, though I have seen enough of its use to be convinced, that it is among the most active of our expectorants, and so far may be serviceable in old catarrhs and other pituitous cases. Experience shows, that, like many other acrid articles, its effects are local, the general system not being sensibly influenced by any dose of it. The dried root,

* Vid. Antispasmodics.

boiled in milk, is the mode in which it is given. As an external application in tinea capitis, tetter, &c. an ointment made with the recent root is used.

ACTÆA RACEMOSA.

This is a very beautiful native plant, known by the provincial titles of rattle weed, rich weed, and black-snake root. I do not know, that I am correct in placing it among the expectorants. Its powers are various, though no one is so predominant or well ascertained, as to enable us to assign it the most appropriate position. By the late Professor Barton, it is located among the astringents, and he tells us, that a decoction of the root was used as a gargle in a putrid sore throat, which prevailed in New Jersey. Besides this property, which I have never been able to discover in any degree, it is expectorant, narcotic, antispasmodic, diaphoretic, and, in a large dose, emetic. Given so as to affect sensibly the system, we find, first, some nausea, followed by greater freedom of expectoration, and more or less relaxation of the surface, with slight nervous tremors, and vertiginous affections. The pulse, during this state, is considerably lowered, and is apt to remain so for some time.

My motive for placing this article among the expectorants, is the reputation which it has acquired in pulmonary diseases, especially asthma and consumption. Its use, it is true, has hitherto been confined

pretty much to popular practice, though there is not wanting some better evidence of its efficacy. It is alleged, in consumption, to lessen the frequency of the pulse, to allay the cough, to quiet the mobility of the system, and particularly to subdue hectic fever. How far this is true, my own experience does not enable me to say.

POLYGALA SENEGA.

This is one of the best of the expectorants. To pneumonia, under almost all circumstances, it is, at least in popular practice, applied, and the confidence reposed in it, in some parts of our country, has long been, and still continues, exceedingly high. Considering, however, its stimulating nature, it ought not to be thus indiscriminately employed. Excepting typhoid pneumonia, it is inadmissible in the early stages of the acute complaints of the chest. But, after inflammatory action has been reduced by previous depletion, it comes in exceedingly well as an expectorant, and, perhaps, also, as having a tendency to relieve congestion of the lungs, by promoting determinations to the surface. It is in this way that it operates so beneficially in the pneumonia of infirm people, which is always attended with debility of the pulmonary organs, and, consequently, with large and oppressive lodgments of phlegm or mucus.

During the last twenty years, however, the seneka

has, in regular practice, been more in repute in *cynanche trachealis*. It was first brought into the treatment of this affection by Dr. Archer, of Maryland, who spoke of its powers with unlimited praise. To every form and stage of the disease he thought it adapted, sometimes prescribing it as an emetic, and under other circumstances as an expectorant. It may certainly be so administered as to answer each of these purposes, though the more correct opinion seems now to be, that its use should be restricted to the secondary, or ultimate stages of the disease—and as an expectorant.

I have never attempted to do more with it. As an emetic, either the tartarised antimony or *ippecacuanha*, alone or combined, has seemed to me preferable, as regarding certainty of operation, as well as inducing a greater degree of relaxation. But to overcome hoarseness, and other sequelæ of the disease, I have found it exceedingly useful.

The *seneka* may be given in powder or saturated decoction. But the latter is to be preferred in the cases before us. The dose of the first is from ten to twenty grains, and of the second half an ounce or more.*

* Vid. Diuretics and Emmenagogues.

AMMONIÆ CARBONAS.

On this article, which is among the most important of the materia medica, I shall treat largely in another place.* It may, therefore, be now sufficient to state, that it is administered, and with great advantage, to relieve the lungs of oppression in the advanced stages of acute pneumonia, sometimes in consumption, as well as in several other pectoral affections hereafter to be mentioned.†

POTASSÆ CARBONAS,

ET

SODÆ CARBONAS.

Neither the vegetable nor mineral alkali has ever before been arranged with the expectorants. But that they operate beneficially in the diseases of the lungs, by favouring excretion and restraining cough, is indisputable. Of late, they have become very popular remedies in pertussis, with every description of practitioners, and the praise of originally directing them in this case, is accorded to Dr. Richard Pearson,* of

* Vid. Stimulants.

† Vid. Diaphoretics.

‡ I find, however, the alkalies were earlier used.

London. His prescription is as follows.* But at the moment that this preparation was generally employed in regular practice, a combination of the salt of tartar and cochineal† was put forth, I do not know by whom, which has gained such general confidence, as to supplant almost every other means in the treatment of the complaint. My experience with the two alkalies is now sufficient to enable me to pronounce with some certainty on their efficacy, which I do not at all doubt. To the same purport we have the concurrent evidence of many respectable physicians, and the popular voice, strongly expressed. That the full effect of the medicine, however, may be attained, it should be given in much larger doses than ordered in the second formula particularly.

Nor are the powers of the alkalies limited to pertussis. I am persuaded that they will be found beneficial in all cases, where a mild expectorant, or cough medicine, is demanded. Of the comparative merits of the two, I cannot judge. Lately, I have been in the habit of prescribing the potash, which appears to be the case with the other medical men of this city. But I am not aware that this preference rests on any solid grounds.

In what manner the alkalies operate, in these affec-

* R. Carb. sod. gr. iii. Vin. ipecac. gtt. v. Tinct. theb. gtt. i. Aq. font. ʒi. This is the dose for a child one year old, to be repeated every three or four hours.

† R. Carb. potass. ʒi. Pulv. cochin. gr. x. Sacch. alb. ʒi. Aq. ʒiv. Of this, half a table-spoonful is the dose.

tions, is not very intelligible. It is alleged, that they neutralize or correct the acid sordes of the alimentary canal. That accumulations of such foul matter, do exist, especially in pertussis, and that the lungs will be sympathetically affected, in consequence of gastric irritation, are facts as well attested as any in pathology. Coughs of an inveterate character, even running on to consumption, I have sometimes met with, which could be distinctly traced to this source. It is not, therefore, altogether improbable, that such may be the *modus operandi* of these substances. They undoubtedly have a very considerable effect, in removing irritations of the mucous surfaces, and especially of the *primæ viæ*. Nevertheless, I do not perceive the necessity of resorting to a chemical solution of the problem. Contrary to common opinion, the alkalies really exert a pretty decisive agency on the system. This is illustrated in several diseases, and particularly in those of a periodical nature. It is well ascertained that a few grains of the carbonate of soda, added to a small portion of Peruvian bark and Virginia snake-root, constitute one of the best remedies in ague and fever; and we are told, by some of the German writers, that they are not without efficacy even in some of the neuroses, as epilepsy, &c. As the alkalies act in these cases, so, most likely, do they in pertussis, by a strong and peculiar impression made on the stomach, extended by consent of parts.

COLCHICUM AUTUMNALE.

An oxymel or syrup of the meadow saffron has been used as an expectorant on the authority of Baron Stærk. I have not prescribed it myself. Whoever is disposed to try it, should bear in mind the great activity of the article, and accommodate it accordingly to the case.

By some of the late English writers we are told, that the vinous tincture of the seeds of the colchicum is eminently useful in the pectoral affections, not so much, however, as an expectorant, as by its sedative influence, reducing vascular action, and calming irritation. In a word, it seems, for such purposes, to have supplanted digitalis in a great degree, and now receives much of the exaggerated praise formerly bestowed on that article.*

BALSAMICA.

In the original acceptation of the term, *balsams* were those medicines by which wounds are healed, and of course included articles of very different qualities. But the definition has been narrowed down so as to apply only to a set of fluid, odorous, inflamma-

* Vid. Diuretics.

ble substances, which closely resemble the terebinthinate preparations.

Consulting medical history, we shall find that the "vegetable balsams" were once in such high repute, as to constitute the chief reliance in "colds, coughs, and consumption." But this vague and indiscriminate application brought them, after a while, into complete discredit, from which they have scarcely yet recovered. Among those that mainly contributed to their rejection, was the celebrated Fothergill, who loudly denounced the propriety of the practice, especially in phthisis.* As often happens, in instances of this nature, he carried his objections too far, and has, in my opinion, done harm, by abridging our resources.

All the balsamic medicines are, without doubt, more or less stimulant, and hence unsuited to the inflammatory state of any of the complaints of the lungs, whether acute or chronic. But action having been sufficiently subdued by the direct depletory measures, I am sure that they may be safely and advantageously prescribed in protracted coughs and catarrhal consumptions. My own experience has satisfied me on this point, and, without hesitation, I recommend an imitation of the practice.

Numerous as are the balsamic articles, they all essentially correspond in their medicinal virtues, differing, indeed, chiefly in the degree of efficacy. The

* London "Medical Observations."

Tolu I have found to be the mildest, the least unpalatable, and, in every view, the most valuable as an expectorant.

BALSAMUM TOLUTANUM.

This is afforded by incision from a tree of South America, called *Toluifera Balsamum*. The juice, thus obtained, speedily thickens, so as to become concrete. Both water and spirit act upon it, producing a solution: the one, boiled to a certain consistence with sugar, is called the syrup, and the other the tincture of Tolu.*

The dose of either of these preparations, is forty or fifty drops. The tincture is the most convenient in the administration, and, united with laudanum, and the tincture of *digitalis*, proves of great service in protracted coughs and catarrhal consumption.†

* The Balsam of Honey, a nostrum vended in the shops, is a preparation of Tolu, and one of some efficacy in protracted catarrhs.

† R. Tinct Tolu. ℥j.

—— Digit.

—— Theb. āā ℥j. M.

Of this mixture 40 or 50 drops may be taken several times a day in a little sweetened water.

BALSAMUM COPAIVÆ.

To what I formerly said of this article I have little to add. The power of the Copaiva, over the morbid states of the mucous surfaces, is sufficiently established. It is hence useful in the weak chronic inflammations of the bronchial system, as well as to restrain its excessive secretions.*

BALSAMUM PERUVIANUM.

This balsam is derived from the *Myroxylum Peruiferum*, a tree of South America. In its qualities, it is essentially the same as the other balsams, and is used pretty much for similar purposes. Lately, however, it has acquired some reputation in tetanus, on the authority of a most respectable practitioner,† who states, that he has seen several cases of that disease from wounds, cured by the internal and external use of it. The application of it as a vulnerary in ill-conditioned ulcers, and particularly to prevent or arrest gangrene, has also within a few years been revived, and some very satisfactory evidence is afforded of its efficacy in these respects.‡

* Vid. Diuretics.

† Dr. Kollock, of Savannah, Georgia.

‡ Vid. Dr. Ainslie's paper in the Asiatic Journal.

The dose of the balsam is twenty or thirty drops, and of the tincture, which is sometimes found in the shops, double this quantity.

INHALATIONES,

OR

INHALATIONS.

Of these it is proper I should say something as a means of promoting expectoration, and to meet several indications, connected with an oppressed or ulcerated condition of the lungs, in which they have been resorted to with advantage.

Every practitioner is familiar with the use of the vapour of water alone or with vinegar, in catarrh, pneumonia, asthma, and a variety of other affections, where expectoration is difficult and deficient. To render this species of inhalation more stimulating, boiling water may be poured on Balsam Tolu, in the proportion of an ounce of the latter to a pint of the former. This is well suited to those cases of the same diseases, in which the accumulations are owing to extreme debility of the lungs, or are retained by the viscosity and tenacity of the matter. Mudge's Inhaler, so called from the name of the inventor, is very convenient for the application of the

remedy. But, where it cannot be had, a common tea-pot may be substituted.

Nearly with the same views, sulphuric ether is strongly recommended, and we are told, by very respectable authority,* that its powers are improved by several substances which are soluble in it. *Cicuta* is particularly praised, half a drachm of which is to be digested in an ounce of ether, for several days, so as to form a saturated tincture. Of this, two or three tea-spoonfuls are to be put into a wine glass, to be held up to the mouth, and inspired. My knowledge of this remedy enables me to speak confidently of its utility. I have tried it often, in dyspnœa from different causes, and generally with advantage. It is very useful, as was originally suggested, in consumption, especially if repeated several times in the day. But, perhaps, a still more valuable remedy of this sort I have derived from Dr. Physick. It consists of a tea-spoonful of Hoffman's anodyne liquor, and another of laudanum, which mixture is to be breathed for half an hour or more at a time. In the forming stage of catarrh, in obstinate coryza, and in hoarseness of recent or long standing, its effects are most striking and decisive. The principle on which it acts, is obvious. The parts are here slightly inflamed, which state is relieved by the *counter agency* of the fumes coming in contact with them.

Camphor, which is highly volatile, has recently

* Dr. Richard Pearson.

been employed for nearly the same purpose.* The mode of application is to hold a piece of it close to the affected part. It is said to be very effectual, in stoppage of the nose, *snuffles*, and in ophthalmia. Mixed with hot water, the vapour is alleged to be no less serviceable in some cases of croup, in cynanche tonsillaris, in common inflammations of the chest, in spasmodic coughs, and such like affections generally. Assuming the fact, which I think not well established, that the external use of camphor repels gout and rheumatism on the internal organs, the inhalation of it is further proposed to drive back these diseases to their original positions. With somewhat the same views, the pure volatile alkali, or in its carbonated states, has been employed, and probably with greater effect, particularly to stimulate the excretory efforts of the lungs, or to dispose indolent ulcers to heal, since it has undoubtedly such an effect on external sores in a similar condition. The inhalation of it has also been recommended in croup to excite coughing, with the hope of detaching the membrane in that disease.

The fumes of concentrated pyroligneous acid, I have directed beneficially, in foul ulcerations of the nostrils and throat, and particularly in ozæna, to correct the fœtid discharges, as well as to improve the condition of the sores.

Nitrous vapours also have been prescribed in pertussis and other pectoral complaints. The little ex-

* By Dr. Badtcher, of Copenhagen. Vid. Phil. Med. Journal, Vol. iv. p. 422.

perience, however, which I have had with them, in the former affection especially, has not inspired much confidence, proving so exceedingly irritating, that they cannot be long endured.

Not altogether dissimilar in its effects to these inhalations, is the practice of smoking certain substances. Tobacco is one of this description, and though, according to Stahl, it affords no relief in ordinary catarrhs, it is highly beneficial in consumption. There is, probably, no foundation for this distinction. Yet he was so convinced of it, that he proposes it, as a criterion by which we may determine the precise nature of these cases. It is only in certain asthmatic affections that I have been able to perceive any utility in the practice. But he who delights in cigars will tell us, that nothing more effectually promotes expectoration in recent catarrh, as well as in the chronic pectoral complaints.

During the last few years, no slight attention has been directed to the smoking of stramonium, as a remedy in asthma and certain cases of dyspnœa. But strong as is the evidence adduced in its favour, I am inclined to suspect that its powers are not considerable. My practice has presented me with cases suited to its exhibition, sufficiently varied to determine its efficacy. In asthma, I have sometimes mitigated the force of the paroxysm by its use, though I am not sensible that I ever made any permanent impression on the disease. In consumption, attended by a violent cough and impeded respiration, I have found it quite as ser-

viceable. It will, occasionally, under these circumstances, calm irritation, and induce a state of comparative ease, which it does, by a combined sedative and expectorant power. Even this, in many of the cases of this terrible disease, is a very desirable attainment. Yet it is doubtful whether it does more, or even so much, as opium used in the same manner. The root of stramonium, previously washed, dried, and bruised, is employed for this purpose. By some writers, and among these is Dr. Bree, the author of a well-known Treatise on Asthma, it is asserted that stramonium, when thus prescribed, is always useless, and often highly dangerous, or even fatal, by producing apoplexy, and other serious complaints. To this, I can only reply that my own observations teach me differently. The only effect which I have seen from it, has been analogous to those induced by the influence of tobacco.

The practice has once more been revived in Europe and in this city, of attempting to heal ulcers of the lungs by the fumes of certain vulnerary and balsamic articles. What is the exact degree of benefit derived from it, I cannot determine positively. My own experience is not satisfactory, though I will not absolutely condemn the practice. More than one of my medical friends speak favourably of it, and I am not disposed to controvert or deny their statements. Candour, however, compels me to say, that as respects the terebinthinate preparations, and these are chiefly employed, I have uniformly found them so

irritating, that they could not be continued without doing manifest harm. Even sulphur or mercury, both of which are much milder, likewise prove offensive to the lungs, and excite violent coughing. This, I have said, is an old practice renewed. Looking into the writings of more than a century back, we shall see, that the practitioners of the time were much attached to it. By Stahl, crude antimony is pointedly recommended with this view, and Bennet, in his work on consumption, extols sulphur and the balsams. More recently, Mudge, to whom I have already alluded, prescribed ether, tar, &c. and Linnæus the hypericum. But, though the practice will probably be found not to answer the purpose proposed, it still may be recurred to, occasionally, to stimulate the lungs to throw off their contents when loaded and oppressed.

As to consumption, more may, I think, be expected from tar fumigations as recently employed. Encouraged by the event of an experiment made on a patient placed in a rope manufactory, Dr. Crichton, now physician to the court of St. Petersburg, has treated some few cases of this disease with success, by these fumigations. The tar is put into an earthen vessel over a lamp, or heated iron, so as to cause a volatilization, till the air of the ward is sufficiently impregnated, which process is repeated three or four times a day. Without entertaining any very sanguine hopes, that this or any other means will prove essentially useful in genuine consumption, I would not, in the slight-

est degree, discourage a trial of this new plan. It comes to us on good authority, and surely nothing promises more in these internal ulcers, than healing measures directly applied. Tar, on every account, its acknowledged balsamic properties in external sores, the tolerance of the lungs under the impression of its fumes, and the facility of its application, is the article which presents the strongest claims to our confidence and attention. To this it may be further added, as affording corroborative evidence, that a residence in the cedar and pine swamps of this country during the summer months, is well known to have been sometimes productive of advantage in pulmonary cases. Yet it will be found most probably to answer best in chronic catarrh, or bronchitis, and similar states of the mucous tissue of the lungs and their appendages. We have, indeed, some pretty strong evidence, that these fumes are serviceable in the advanced stages of pertussis, attended with difficult respiration from oppressive accumulations in the bronchial structure.

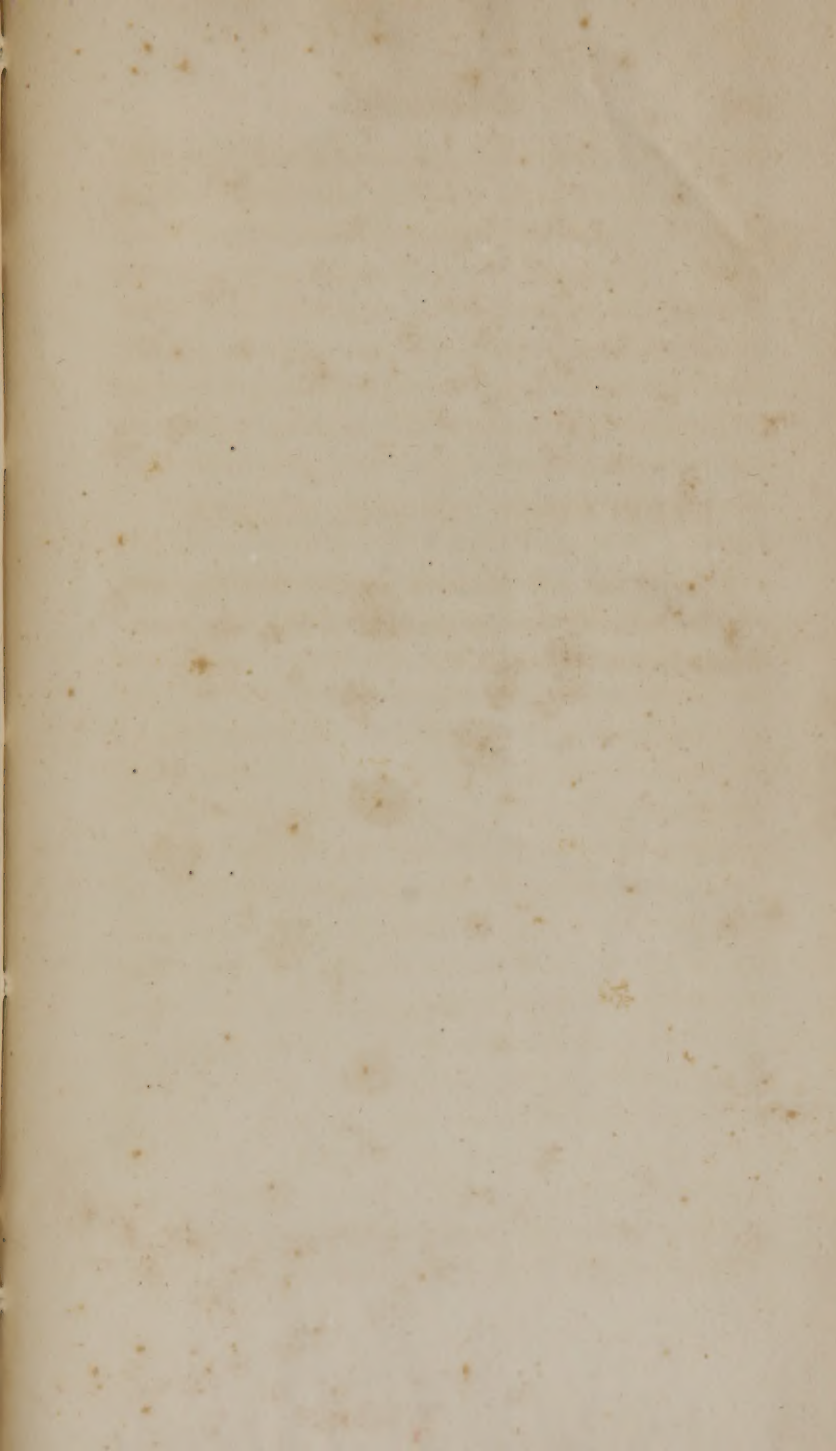
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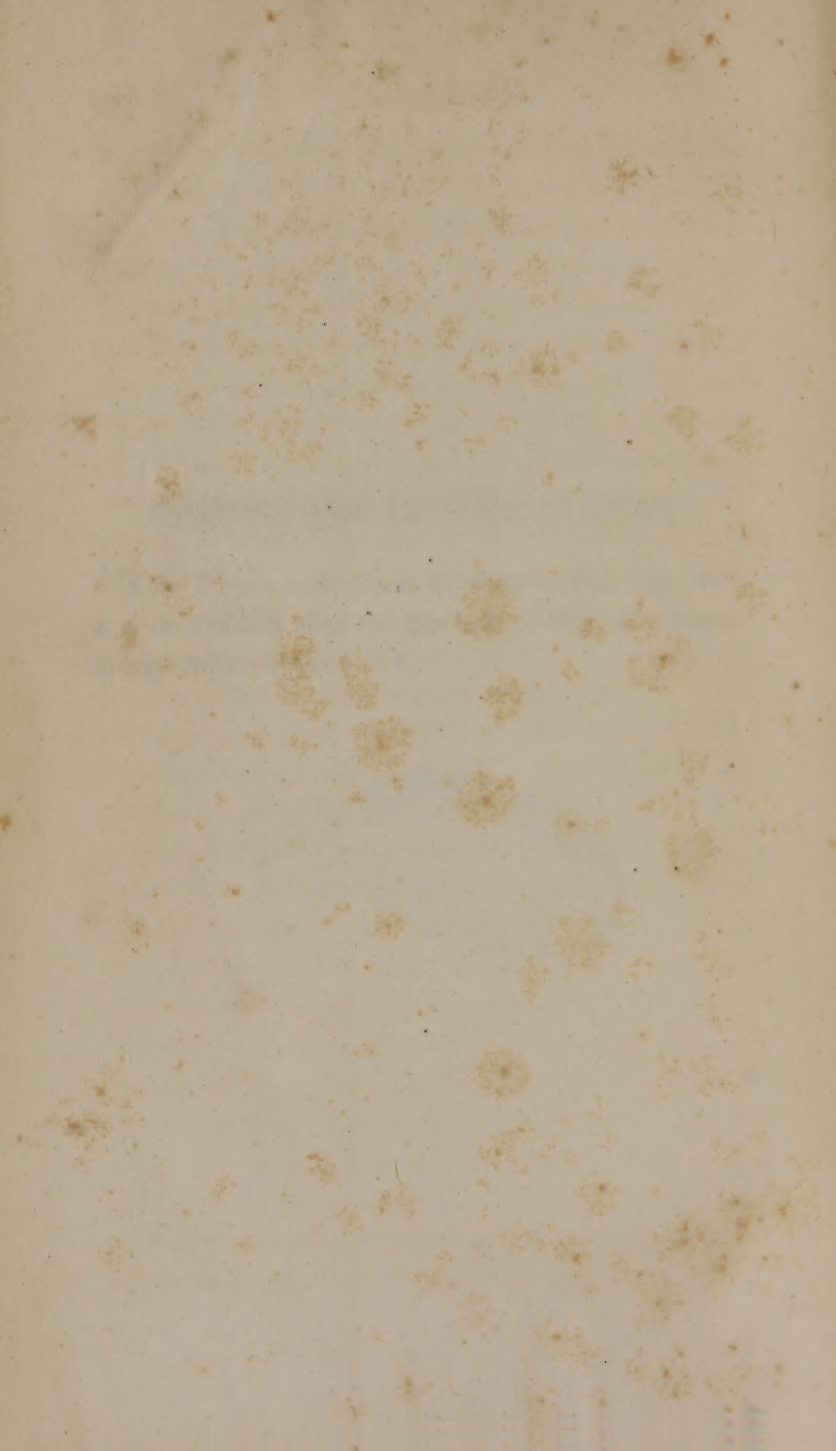


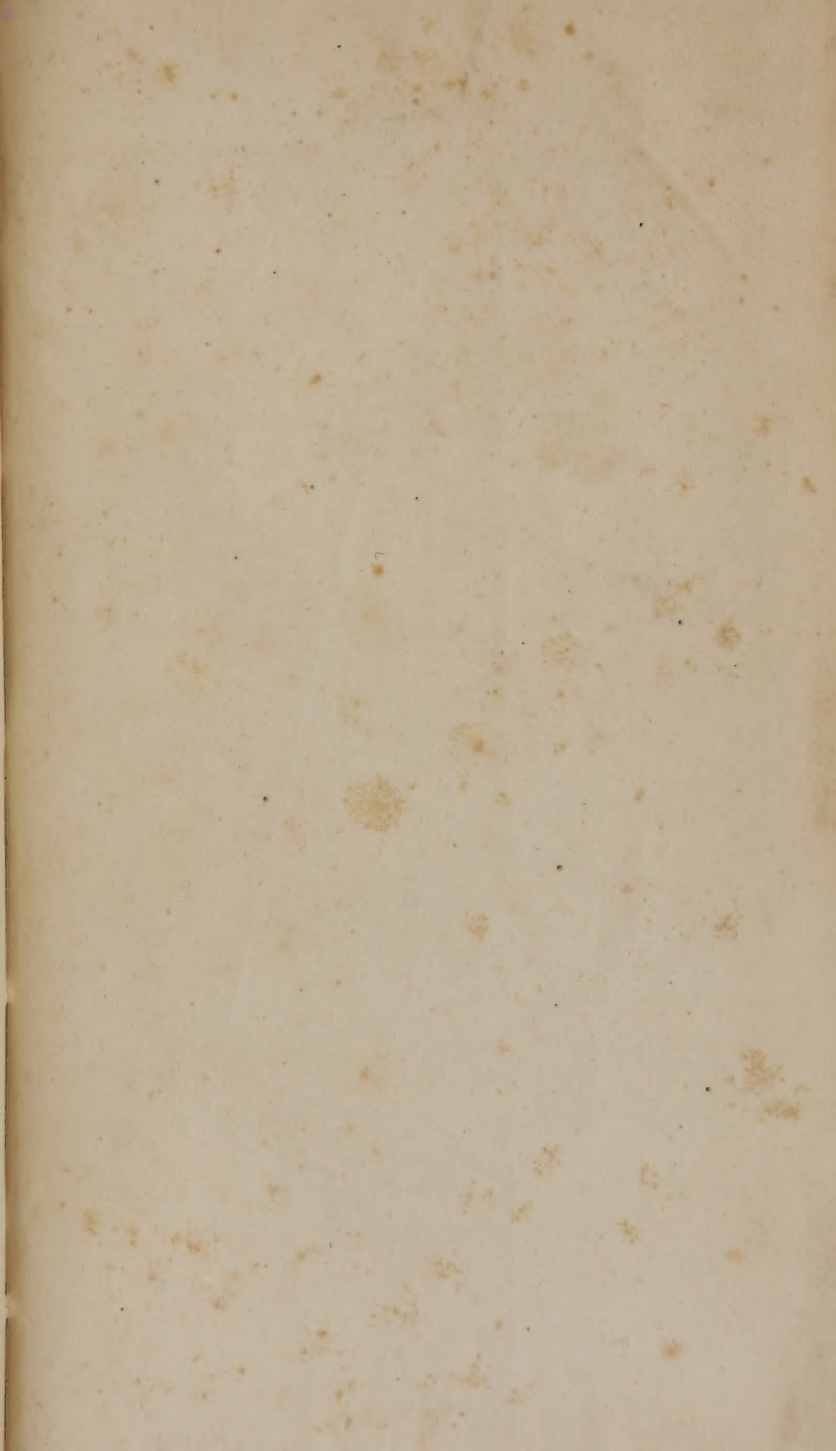
DIRECTIONS TO THE BINDER.

THE Binder will please to observe that Sig. 49* is to be inserted after the first leaf of Sig. 49, immediately before Section XV.









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